

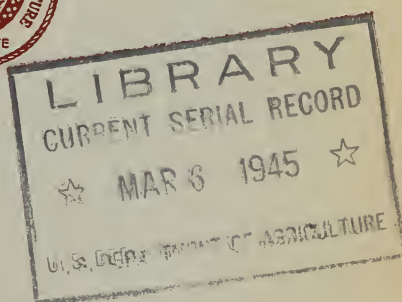
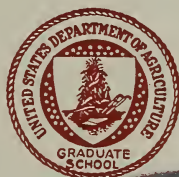
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UNITED STATES DEPARTMENT OF AGRICULTURE

Graduate School Bulletin

SPRING SEMESTER 1945



*Graduate and Undergraduate
Continuation Study for Federal Employees*

WASHINGTON ~ JANUARY, 1945

This Bulletin covers graduate and undergraduate programs for the Spring Semester only. A special Graduate Bulletin concerned with graduate programs only is available on request. A special bulletin on correspondence study is likewise available.

SPRING SEMESTER BEGINS FEBRUARY 5

Registration from January 22 to February 3

Calendar for Spring Semester

January 22 to February 3—Registration

January 29 to February 2—Counseling available

February 5, Monday—Spring Semester begins

February 5 to 9—All classes begin unless other date is given in this Bulletin

February 10, Saturday—End of refund period and last day of registration transfer without payment of extra fee

March 17, Saturday—Last day to make deferred payments

May 18, Friday—Close of Spring Semester *

All classes begin between February 5 and 9

* Classes which have missed sessions for any reason will continue until deficiency is made up.

Business Office—Room 1031, South Agriculture Building
Between 12th and 14th on Independence Avenue, SW.

Hours—9:00 A.M. to 6:20 P.M. (1 P.M. Saturday)

Telephone—Republic 4142, Extension 6337

UNITED STATES DEPARTMENT OF AGRICULTURE

*Graduate School
Bulletin*

SPRING SEMESTER 1945



*Graduate and Undergraduate
Continuation Study for Federal Employees*

WASHINGTON ~ JANUARY, 1945

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* On leave 1944-45.

† Acting Chairman.

General Information

ORIGIN AND PURPOSE

THE GRADUATE SCHOOL, a self-supporting, non-profit institution, has as its chief purpose the stimulation and encouragement of education for Federal employees after they enter Government work. Established in 1921 by Secretary Henry C. Wallace, primarily to furnish opportunities for the education and training of employees in the Department of Agriculture, the institution now offers courses which are open to all Federal employees.

In fulfillment of its original purpose, the School now presents a rich and varied curriculum ranging from the comparatively elementary to advanced study on the purely graduate level. Representatives of every important agency of the Federal Government were among the more than 5000 persons who enrolled for instruction in 1943-44.

In the course of almost a quarter-century of experience in meeting changing educational needs of Federal employees, the School has grown into a unique educational institution. It is, in effect, (1) a graduate school, (2) an in-service training institute, and (3) an adult education organization. These functions are implicit in the original objectives prescribed for the School:

1. To supplement in-service training programs, conducted on government time and at government expense, by making it possible for employees to train themselves both intensively and extensively for proficiency in their present positions and for advancement to better positions.
2. To make available to career employees the opportunity to advance educationally, continuously and progressively, as they advance in job proficiency and responsibility.
3. To provide graduate education acceptable in graduate institutions for the convenience of employees who desire advanced degrees but find it difficult, both for personal and official reasons, to complete all study in residence at the degree-granting institution.
4. To provide certain cultural, creative, and leisure-time opportunities for employees.
5. To assure the attainment of these objectives by making available to employees the experience, knowledge, and instructional talent of outstanding specialists in the Federal service.¹

In making these objectives effective, the emphasis of the School is on functional education. Dedicated to meeting the actual needs of employees, the School centers its attention on the human element—teachers and students—in the educational process. Methods,

¹ United States Department of Agriculture "Regulations Governing the Graduate School Promulgated Pursuant to the Authority Contained in the Act of April 12, 1892, and the Deficiency Act of March 3, 1901 (20 U.S.C. Sec. 91)."

organization, physical facilities and related factors are secondary in importance. The entire program of the School is based on the belief that work and study can be combined to mutual advantage. The School also operates in the conviction that, inasmuch as after-work activities and off-the-job environment have a vital relation to morale and performance on the job, the public interest is served by providing Federal employees with broad opportunities for continuation study along the lines of their *general* interests as *individuals* as well as their *special* interests as *employees*. Courses, as a result, range from the cultural to the vocational, without exclusive emphasis on either.

AUTHORITY

Congress has authorized the use of Government facilities for study and research by qualified individuals, students, and graduates of institutions of learning in the several states and in the District of Columbia under rules and regulations set up by the heads of departments and bureau chiefs. It was under this authority, combined with the provisions of the organic act of the Department, that the Graduate School was organized.² A summary of the regulations governing the Graduate School was issued by the Department February 9, 1943.

ADMINISTRATION

The government of the School is vested in a General Administration Board appointed by the Secretary of Agriculture. The School is administered by a Director, appointed by the Board, with the assistance of a small staff. Eight committees named by the Board, one for each major division of the School, advise the administration concerning educational matters in their respective fields. Neither board members nor committees receive compensation. The School receives no Federal funds. Its operating expenses, reduced to a minimum by the use of Government buildings and facilities, are paid entirely from small course fees.

ROLE IN THE DEPARTMENT

Its extensive contribution to morale and competence among employees of the Department of Agriculture and other Federal agencies is the chief justification for the Graduate School. It promotes forward-looking personnel administration by offering ambitious employees numerous opportunities to prepare themselves for more efficient public service. Among other things, the School offers avenues of advancement for employees to rise above blind-alley jobs by

² (Joint Res. April 12, 1892, 27 Stat. 395; Deficiency Act of March 3, 1901, 31 Stat. 1010, 1039.)

preparing themselves adequately for promotion to more significant positions. By presenting facilities of escape from routine to broader cultural interests through creative achievement after work hours, the School challenges the development of the employee's intellectual faculties to keep abreast of his whole field of knowledge, when the daily job may require only a minor portion of this information. This broader outlook increases the employee's understanding of his own special duties and their relation to larger and more general programs of action. Finally, the School presents a unique opportunity for young professional men to gain the most fruitful educational experience which comes from personal, non-official contacts with older workers who have rich backgrounds in their respective specialties. The recognition of the value of the School to the personnel work of the Department is shown by a Secretarial memorandum which names the Director of Personnel as *ex officio* Chairman, General Administration Board of the School.

The School supplements Departmental in-service training programs, elaborates upon them, and carries on from where they end. Training conducted on Government time is likely to be confined to immediate needs, to knowledge and skills which will give reasonably definite direct returns to the Government. The Graduate School offers a no less vital service to the Government, although the results may be more indirect and intangible. The School opens avenues for long-run advancement which training officers, for financial and other reasons, are unable to offer at Government expense. In-service training programs emphasize primarily, if not exclusively, the training needs of management, while the Graduate School meets the needs of employees, many of whom wish to prepare themselves for professional promotions beyond the interests and jurisdiction of the training offered in the agencies in which the employees are working.

LECTURES AND PUBLICATIONS

At least one lecture series dealing with a major current problem is offered each year. During the Fall Semester various aspects of "Organizing for Peace" were discussed by eight distinguished speakers: Sir Willmott Lewis, Nathaniel Peffer, Pitman Potter, Jacob Viner, Hanson Baldwin, Derwent Whittlesey, James W. Fulbright, and André Geraud (Pertinax). If other lectures are offered in the spring, a special announcement will be issued. Several of the lectures of previous years, and a few other valuable works, are available as Graduate School publications. (See list on inside back cover.)

COUNSELING SERVICES

To aid students in planning their education and training, a panel of Departmental Educational Counselors has been designated by the Department of Agriculture in their major fields of study. These persons, outstanding in their respective fields, serve also as members of the departmental committees of the Graduate School and may be consulted by students from outside the Department of Agriculture. They are always available for consultation on educational plans, whether to be pursued in the Graduate School or in other institutions. A list of these Counselors may be obtained from the Graduate School.

Each bureau and office of the Department of Agriculture has designated an educational counselor to advise with its own employees. The names of these counselors may be secured from the bureau or office in question; field employees may address their educational counselors in care of their organizations.

FACULTY

The Graduate School faculty is composed almost entirely of persons in the Federal service, a source of talent and expertness unexcelled anywhere in the nation. Professional competence is the sole criterion of selection. Faculty members combine excellent academic training, college-teaching experience, and daily practice in the application of the subject matter taught. The only exception to this pattern of qualifications is found in a few cases obviously requiring greater emphasis on technical experience than on academic background. (See Faculty section at back.)

CERTIFIED STATEMENTS OF ACCOMPLISHMENT

In three fields—statistics, public administration, and accounting—the Graduate School offers Certified Statements of Accomplishment upon the student's completion of a specified program of study. (For complete details see the Departments of Public Administration and Mathematics and Statistics). These Statements are offered to encourage the student to complete a well-rounded approach to his chosen field of study and work, so that he may more competently discharge his present and prospective responsibilities as a public servant.

LIBRARY FACILITIES

The Department of Agriculture Library, containing approximately half a million books, is open to Graduate School students from 8:30 a. m. to 8:30 p. m. Through that Library, the School also has ready and convenient access to unexcelled special libraries.

GENERAL INFORMATION

LIBRARY ASSISTANTSHIPS

A limited number of library assistantships are open to qualified students from the Department of Agriculture who wish to use this method of paying their fees. All work is done after official hours. Students interested should inquire at the School Office.

FELLOWS AND INTERNS

Each year the Department of Agriculture, in cooperation with the Department of State and the Office of Inter-American Affairs, provides to some sixty or eighty representatives of the other American republics graduate fellowship opportunities for study, observation, and training in the United States. The program is designed to provide additional training for serious, competent scientists and professional men in the improvement of agriculture and living conditions in the Americas. Its aim is to develop public-minded leaders who are able to carry full public and professional responsibilities. The Graduate School cooperates in this undertaking by granting honorary graduate fellowships to all of these students from the other American republics. The School also participates in the Departmental committee that formulates the general programs for this group.

The National Institute of Public Affairs works with colleges and universities and with Federal agencies in Washington in providing annually an internship program for a group of college graduates, competitively selected from the country at large. The Department of Agriculture for several years has cooperated in this undertaking by furnishing selected training and internship opportunities for trainees from the Institute. The Graduate School cooperates by granting to such interns, whether in the Department of Agriculture or in other Federal agencies, graduate fellowships for study in the School.

CORRESPONDENCE WORK

The Graduate School offers a limited number of correspondence courses intended primarily for the benefit of field employees of the Department of Agriculture. Other Federal Government employees are admitted as staff and facilities permit. Plans are in progress for expansion of this type of education. Persons who are interested may write the School for a special announcement covering correspondence study.

REGISTRATION REGULATIONS

Opening Date. The Spring Semester of the twenty-fourth year of the Graduate School opens on Monday, February 5, 1945. All

classes begin during the week starting on that date. The fall and spring semesters run fifteen weeks each.

Admission. Admission to courses in the Graduate School is open to all qualified employees in the Federal service, and to such other qualified individuals as facilities will permit. Admission to correspondence courses is open only to Federal employees.

Planning Your Program. During the period from January 29 to February 2 (from 5:30 to 6:30 p. m.) representatives of the major departments of the School will be available for consultation on courses and programs of study. At other times members of the School staff will be glad to provide assistance.

Registration. Registration should be made at the earliest opportunity in Room 1031, South Building, Department of Agriculture. After Saturday, February 10, students may enroll for credit only with the approval of the instructor and the Director. Mail registration forms will be supplied on request. Registration is not completed until the required fees have been paid. When the limitation set for each course is reached, registration for that course is closed. The Graduate School reserves the right to cancel any course if registration does not warrant continuance.

Late Registration Fee. Students who register or transfer to other classes after February 10 must pay a late registration fee of \$1.00 a course. This does not apply to persons who submit written evidence that official Government action prevented their registration prior to that date.

Fees. The fee for each course is indicated in the course description. Unless otherwise stated, fees are computed at the rate of \$6.00 a credit hour for undergraduate courses, and \$7.00 a credit hour for graduate and the most advanced undergraduate courses. The fee for auditing a course is the same as that charged for credit.

Partial Payment Plan. Arrangements may be made at the time of registration for payment in two installments, for which there will be an additional service charge of \$1.00 for each course. The first installment of not less than half the full fee, plus the \$1.00 service charge, must be paid at the time of registration. The second and final installment must be paid on or before March 17. Failure to pay will result in automatic suspension from the course.

Refunds. Students withdrawing from classes will not be entitled to refund except that—

1. When a student is granted permission to withdraw from a course on or before February 17, his fee, minus a \$3.00 registration charge, will be refunded.
2. When a student is OFFICIALLY transferred out of the Washington area or leaves Washington to enter the

armed forces, his fee, minus a \$3.00 registration charge for each course, will be refunded in the amount proportionate to the unexpired portion of the semester, provided written evidence of such transfer or induction is presented. This does not apply to cases arising out of the student's voluntary action.

Written application for refund or withdrawal must be made in person on blank provided for that purpose.

All adjustments are made as of the date on which application for refund is received.

If a course is cancelled all fees will be refunded.

Room Schedules. Room schedules for classes will be posted on bulletin boards outside Room 1031, and in the north entrances of the fourth and seventh wings of the South Building.

Residence Credit at American University. Students planning to enroll in cooperative courses, offered at the Graduate School, for residence credit towards an advanced degree at American University must work out their programs in advance with the Dean of the Graduate Division, American University, and must file with the registrar of that institution a transcript of previous academic work.

CREDIT AND CERTIFICATION

Academic Credit. Persons registering for academic credit must satisfy all prerequisites for admission to the course, as specified in the course description.

Students who wish to transfer graduate or undergraduate credit to a college or university or to the United States Civil Service Commission must file with the Graduate School an official record indicating a bachelor's degree (for courses carrying graduate credit), or satisfactory completion of at least fifteen units of high school work (for courses carrying undergraduate credit). Such records become the property of the Graduate School. Graduate students should arrange their programs in advance through the dean of the graduate school of the institution from which the degree is contemplated. The latest catalogs of colleges and universities are available for examination in the Department of Agriculture Library.

The United States Civil Service Commission accepts Graduate School credits, the same as those from recognized colleges and universities, for examination and qualification purposes. Although courses are of standard graduate and undergraduate grade for the levels indicated (with the exception of a few non-credit courses given to meet special training needs of Federal employees), the School does not grant degrees and has never sought that authority.

It prefers to cooperate with existing institutions having that function. Students who wish credit transferred must, of course, meet in all particulars the requirements of the institution to which credits are to be sent. These may, in accordance with growing practice, sometimes call for qualifying examinations for advanced credit. However, certifications of Graduate School work have been accepted for the past twenty-three years by many of the leading colleges and universities. Because of the peculiar conditions under which the School operates, it has never asked, and never felt it necessary to ask, to be included on the lists of accrediting associations. For acceptance of its credits, it relies on the merits of its courses and on the caliber and well-known competence of its instructors. Methods, grades, and credits are without significance unless they result in demonstrated knowledge, skills, and attitudes and in real ability to make effective application. Course requirements and examinations for credit are planned accordingly.

Cooperation with American University. The Graduate School of the Department of Agriculture and the Graduate Division of the School of Social Sciences and Public Affairs of American University have found it mutually advantageous to cooperate in portions of their graduate programs. Certain courses in each school which supplement courses in the other are offered cooperatively. Courses in this announcement preceded by an asterisk may be applied as residence credit towards an advanced degree at American University.

Audit. A student registering as an auditor receives full privileges of class participation if he chooses to exercise them. He does not receive a grade; he receives only a mark of AUD. He is not expected to take examinations and is not held responsible in any other way for meeting standards expected of credit students.

Grades. Students registering for credit will receive written notice by mail of grades received. Students should keep the School office informed of changes of address.

Certification of Record. Upon a student's written request, an official certification bearing the seal of the Graduate School will be sent to him or to an organization designated by him. The fee for this service is 50 cents a copy prepaid. (Note: Students who desire a certification of work done prior to the academic year 1941-42 must comply with certification rules in effect at the time the student was enrolled.) Certification of record for academic credit to be transferred to a college or university will not be made unless the student has filed with the Graduate School a transcript of his previous academic work. (See Academic Credit above.)

Department of Biological Sciences

DEPARTMENTAL COMMITTEE

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M. A. MCCALL, Ph.D., Assistant Chief, Bureau of Plant Industry, Soils, and Agricultural Engineering
BENJAMIN SCHWARTZ, Ph.D., Chief, Zoological Division, Bureau of Animal Industry
R. Y. WINTERS, Ph.D., Research Coordinator, Agricultural Research Administration

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Course Numbers and Symbols—Below 100, non-credit; 100–499, undergraduate; 500–699, graduate and advanced undergraduate; above 700, graduate. Bracketed numbers, not given this year. Figures in parentheses following the course title indicate number of semester credits.

—O—

209. Systematic Botany (2 each semester)

M 6-8. \$12

SIDNEY F. BLAKE

Intended to give those with no previous experience in systematic botany an acquaintance with the elementary principles of the subject sufficient to enable them to use the ordinary manuals to advantage. The second semester is devoted to the identification of wild plants of this region by the use of a manual. One or two short field trips will be held.

Prerequisite: First semester or equivalent.

207. Land Management Ecology (3) Fall

EDWARD H. GRAHAM

559. Medical and Veterinary Entomology (2 each semester)

M 6-8. \$14

F. C. BISHOPP

A timely general course in medical entomology with emphasis on the practical aspects of this important field. The biology, habits, and relation to disease of insects, spiders, mites, and ticks, are discussed. How these arthropods affect man and animals as intermediate hosts, or carriers of disease-producing organisms, is given attention and special consideration is given methods of control. The adaptation of known control procedures to present-day defense problems is considered. Features of the course include lectures by outstanding specialists in this general field and round-table discussions of practical problems.

Prerequisite: First semester or equivalent.

564. Genetics (2 each semester)

M 6-8. \$14. New students admitted

TAGE U. H. ELLINGER

A survey course on the broadest biological basis, covering the mechanisms of the transmission of hereditary characteristics (cyto-genetics), gene action in development (physiological genetics and phases of experimental embryology), and population genetics (including the evolutionary aspects). Lectures and discussion. The course is designed for students who have not had a specialized course in genetics and for advanced students who desire a review of the whole field.

784. Genetics Seminar (2 each semester)

M 8-10. \$14. New students admitted

TAGE U. H. ELLINGER

The seminar course will be based principally on outstanding contributions that have marked great advances in the theory and application of genetics. Reading assignments, student reports, discussion. In the selection of the material to be reviewed, consideration will be given to the special interests or professional requirements of the individual students. In 1944-45 much attention will be given to the great naturalists, the biometric school, and the genotype-phenotype axiom.

This and the preceding course (564) will be so conducted that students may profit by attending both.

[206.] Useful Plants of the American Tropics

F. RAYMOND FOSBERG

[554.] Advanced Plant Ecology

M. B. WAITE

[555.] Plant Physiology

GLENN A. GREATHOUSE

[556.] Plant Biophysics

GLENN A. GREATHOUSE

Introduction to Experimental Design

(See Mathematics and Statistics [126])

A. E. BRANDT

Soil Fertility

(See Physical Sciences 157)

J. K. ABLEITER

Comparative World Agriculture

(See Social Sciences 581)

CLAYTON E. WHIPPLE

Production Economics

(See Social Sciences 824)

Department of Engineering and Mechanical Arts

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ROBERT W. TRULLINGER, B.S., Assistant Chief, Office of Experiment Stations
FAYETTE S. WARNER, Ph.D., Engineer-Economist, Federal Power Commission
MARSHALL S. WRIGHT, Principal Cartographic Engineer, Office of the Secretary, USDA

—O—

Course Numbers and Symbols—Below 100, non-credit; 100–499, undergraduate; 500–699, graduate and advanced undergraduate; above 700, graduate. Bracketed numbers, not given this year. Figures in parentheses following the course title indicate number of semester credits.

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PHOTOGRAPHY

192. Basic Photography (2)

M 6-8 beginning Feb. 12. \$12

CARL H. HANSON and SPECIALISTS

This is a lecture-demonstration course, elementary and basic in character, designed to meet the needs of the amateur. Nearly all lectures are fully illustrated with slides, supplemented by other illustrative material. Demonstrations are given when feasible. No laboratory work, but individual guidance will be freely given students who can and will arrange to do practice work. Results of practice work may be submitted for criticism.

Topics covered: elementary photographic optics, films, and plates, the use of cameras and lenses, exposure, composition, darkroom conveniences and technique, developers and development, the technique of negative making, the theory and practice of making contact and projection prints, outdoor and indoor photography, child photography, filters and their use, lighting and posing in portraiture, home portraiture, Kodachrome photography.

A list of the textbooks used in this course may be obtained from the Graduate School Office.

193. Applied Photography (2)

M 6-8. \$12

ELBRIDGE C. PURDY

This is a laboratory course which enables the students who have taken Basic Photography (Course 192 above) or equivalent *to apply* theory and principles in the studio and laboratory. Individual guidance will be given students. The results of the work will be analyzed. Topics covered: films and plates, use of cameras and lenses, exposure, composition, darkroom techniques, developers and development, theory and practice of making contact and projection prints, outdoor and indoor photography, filters and their use, lighting and posing in portraiture, and color photography.

Prerequisite: Basic Photography or equivalent.

ENGINEERING

[175.] Naval Architecture (2 each semester)

C. L. WRIGHT

[176.] Ship Construction (2 each semester)

C. L. WRIGHT

[177.] Aerodynamics (2 each semester)

W. E. KONECZNY

[178.] Airplane Stress Analysis (2 each semester)

W. E. KONECZNY

[179.] Aircraft Power Plants**Electric Utility Engineering**

(See Utility Administration 857)

Advanced Physical Metallurgy

(See Physical Sciences 526)

Engineering Alloys

(See Physical Sciences 540)

GRAPHIC PRESENTATION

180. Basic Mechanical Drawing (2)

Tu-Th 6-8. \$20

GEORGE L. EDICK

Problems in conventional presentation of objects by means of lines, including geometrical problems, orthographic projection, intersections, developments, dimensioning and lettering. Prerequisite to the courses in architectural and mechanical drafting.

181. Architectural Drafting (2)

Tu-Th 6-8. \$20

GEORGE L. EDICK

Study of framing methods and use of building materials, architectural symbols. Drawing of necessary construction details, plan. Section and elevations for a series of buildings, from sketches.

182. Mechanical Drafting (2)

Tu-Th 6-8. \$20

GEORGE L. EDICK

Study of conventional symbols and machine shop practice. A series of problems including detail and assembly drawings. Scale detail drawings from measured sketches by the student.

Prerequisite: Basic mechanical drawing or equivalent.

[183.] Surveying

E. J. SCHLATTER

[184.] Aerial Photogrammetry

REYNOLD E. ASK

185. Pencil Sketching and Freehand Drawing (2)

M-W 6-8. \$15

WALTER G. CADMUS

A study of shade, shadows, and perspective. An intensive study of theory, harmony of lines, and pictorial and outdoor sketching. Each student receives individual criticism. Open to both beginners and advanced students. Sketching only, two hours a week; Wed. (1 hr. cr.) from 6 to 8; fee \$10.

186. Interior Decoration (1 each semester)

Sec. I. W 6-7. First semester work. \$6

HARRIET GARRELS

Sec. II. W 8-9. Second semester work. \$6

The first semester's work includes principles of arrangement, color, walls, window treatments, floor coverings and lighting.

The second semester's work includes furniture styles, pictures, accessories, modern furniture and furnishings, and flower arrangement.

As the second semester is not based on the first, the order in which they are studied is not important. Students may register for the second semester without having covered the first.

194. Introduction to Art (2 each semester) Fall

FRANCES FERRY

195. Drawing for Portraiture and Illustration (2)

W-F 6-8. \$15

PIETRO LAZZARI

Portrait drawing: planning of portraits as to composition, material and medium. Various techniques and effects in portraiture.

Basic techniques of illustration for reproduction in books, magazines and periodicals.

Fundamentals of color and approaches to painting—grounds and pigments, water-color, tempera, oil, fresco.

Graphic Methods for Presenting Statistical and Geographic Data

(See Mathematics and Statistics 124)

MECHANICAL ARTS**188. Glass Blowing (2 each semester)**

M-W 6-7:30. \$20 (including materials)

L. B. CLARK

A laboratory course for technicians. Simple manipulation of joining, bending, and shaping is carried through to the production of useful apparatus. Metal in glass and glass to metal seals of all types are made. During the first semester the soft glasses are utilized for practice; during the second semester the related glasses are used. Ample opportunity for advanced work is given those who show themselves particularly adapted to the work. (New students may be admitted if space permits.)

TEXTILES**189. Introduction to Textile Technology (3)**

M-W 8-9:30. \$18

STANLEY A. SOKOLOFF

A practical course in the fundamentals of textiles, from fiber to fabric. Intended to be particularly useful to procurement officers, engineers, and others with occupational interest in the subject, as well as informative to those seeking only a systematic understanding of our textile surroundings. Topics covered

are: characteristics and identification of fibers; yarns and spinning; weave design and the loom; dyestuffs and their application; finishing processes; construction and nomenclature of typical fabrics; testing; government specifications and trade standards. Emphasis is placed on cotton, wool, and rayon, although other fibers (including the latest synthetics) are covered. Students will work with samples of various materials discussed.

190. Textile Design and Fabric Development (2)

Tu 7:30-9:30. \$12

STANLEY A. SOKOLOFF

The technical planning of woven fabrics. Intended to be particularly useful to persons engaged in the development of textiles for military or civilian purposes, and writers of specifications for the Government procurement agencies. Subjects covered include: basic weaves and derivatives thereof; leno and pile structures; Jacquard design; relation of weave to physical properties of fabrics; mill specifications and drafts; types of looms and their capacities; cloth analysis; cost calculations; manufacturing operations. Fabrics of varied types, from heavy duck to brocade, are discussed. Students analyze samples and draft original designs for new fabrics, giving the technical particulars required for manufacturing.

Prerequisite: Introduction to Textile Technology, or adequate technical background in textiles.

[191.] Cotton Classing

R. L. KAUSE

UTILITY ADMINISTRATION AND REGULATION

Note: These courses are offered to meet the special needs of a large group of Federal employees. For their convenience the classes will be held in buildings of the Federal Power Commission, 18th and Pennsylvania Ave., N.W.

Information about the technical content of the courses may be obtained from Dr. Fayette S. Warner. Call Branch 222, Federal Power Commission.

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677. Public Power (2) Fall

H. W. BLALOCK assisted by
JUDSON KING and other SPECIALISTS

679. Electric and Gas Utility Rates (2) Fall

H. ZINDER and W. E. CAINE

857. Electric Utility Engineering (2 each semester)

Tu 7:30-9:30. \$14

J. J. A. JESSEL assisted by W. J. LYNOTT, JR.

The fundamentals of electric utility engineering and their practical application to generating, transmitting, and distributing electric energy by electric utilities. Designed for engineers, engineering aids, lawyers, accountants and others who desire a broader understanding of the basic principles of electric utility engineering as applied to operating electric utilities. Subjects covered are: A general description of production, transmission, and distribution plants of electric utility, including each of the units of the property and an explanation of its functions; lectures and case studies in design and operation of electric generating stations, transmission lines and substations, and distribution substations, feeders, transformers, and services; discussions of practices followed by electric utilities in serving different classes of customers.

Prerequisite: First semester or equivalent.

- [366.] **Original Cost Accounting for Electric and Gas Utilities** (3 each semester)

K. L. SMITH and R. C. RAINWATER

- [678.] **Water Power Engineering** (3 each semester)

KENNETH W. ROSS

- [680.] **Public Utility Evidence** (3 each semester)

LAMBERT MCALLISTER and WILLARD GATCHEL

- [581.] **Manufacturing Industries and Their Use of Energy** (2)

FAYETTE WARNER and S. H. THOMPSON

Department of Languages and Literature

DEPARTMENTAL COMMITTEE

HARRY B. HUMPHREY, Ph.D., Principal Pathologist (retired), Bureau of Plant Industry, Soils, and Agricultural Engineering (Chairman)
GOVE HAMBIDGE, A.B., Coordinator of Research Publication, Agricultural Research Administration
MARJORIE C. JOHNSTON, Ph.D., Consultant on the Teaching of Spanish, U. S. Office of Education
M. C. MERRILL, Ph.D., Chief of Publications, Office of Information
RALPH R. SHAW, M.S., Department Librarian (on military leave)

IMPORTANCE OF ENGLISH WRITING AND SPEECH

Among students preparing for technical careers and among busy people employed on the basis of their technical competence, there is an inevitable tendency to concentrate on subject-matter specialties, to the great neglect—if not exclusion—of the auxiliary subjects that can effectively implement such specialties. It is common knowledge in the Government service that nothing so much retards the progress of many young technicians, scientists, and other professional personnel as their inability to incorporate the results of their thinking and of their research in effective, concise, lucid English, written or oral. Technical knowledge is of no value unless it can be communicated to others. There are indeed few persons who cannot greatly benefit from the further sharpening of their tools of communication.

In selecting for the Department of Languages and Literature the courses in English here described, much thought and care have been given those branches of our language that are basic and necessary to its intelligent use and finesse in expression. The major objective is the development of facility of expression, both oral and written, so that thoughts and feelings can be presented clearly, interestingly, and convincingly.

—O—

Course Numbers and Symbols—Below 100, non-credit; 100–499, undergraduate; 500–699, graduate and advanced undergraduate; above 700, graduate. Bracketed numbers, not given this year. Figures in parentheses following the course title indicate number of semester credits.

—O—

ENGLISH

222^a. Composition and Rhetoric (3 each semester)

Tu 6-9. \$18

TO BE ANNOUNCED

Equivalent of freshman English. An introductory course in writing and English usage, designed especially for those who need a course preparatory to

more advanced English studies. Special attention given to the fundamental principles and mechanics of good writing—grammar, punctuation, spelling, diction, etc. Exercises in writing short and long themes and in studying, analyzing, and evaluating selected English prose texts. (Students who have completed four credits under the former arrangement of the course may obtain the additional credit requirement in the course below.)

222^b. Composition and Rhetoric

Tu 6-9. \$18

ROMAIN G. GREENE

Continuation of course 222^a above.

223. Descriptive English Grammar (2)

M 6-8. \$12

KATHRYN WARD

A course in grammatical principles, stressing sentence structure and correct English form. Exercises in diagramming and analyzing sentences and in correcting examples of English.

WRITING AND EDITING

224. Creative Writing (2)

Th 6-8. \$12

DEWITT C. WING

Primarily this course aims to develop the student's inclination to practice writing through guidance and example. Emphasis is laid on facility of expression. The course presupposes fundamental knowledge of composition. Stories, sketches, articles, book and magazine reviews, personal letters, and letters to editors are assigned work.

225. Editing (3) Fall

M. C. MERRILL and SPECIALISTS

237. Government Printing Procedure (1)

M 7-8. \$6

JULIAN H. MCWHORTER

Intended for those whose task it is to make arrangements for the printing of books, pamphlets, posters, folders, charts, forms, and other printed matter, and who deal with author or editor and the printer. Subjects covered include: analysis of the manuscript and its purpose to determine the format of the printed piece; copy fitting and measuring; organization of copy; economy of attention of the reader; legibility and readability; type faces and typography; illustrations; printing processes; paper; binding; preparation of copy for the printer, handling of proofs; specifications and cost factors. The knowledge of methods and procedures to be acquired from this course is intended to give the students competence and confidence in dealing with author, editor, and printer.

226^a. Writing for Official Purposes (2) Fall

HOWARD ZAHNISER

226^b. Writing for Official Purposes (2)

F 6-8. \$12

FRANK THONE

This course will present informally the elements of popular writing on scientific and technical subjects, with special attention to the requirements of newspapers and general magazines. The seminar method will be followed as far as practicable, and as much practice in actual preparation of copy as possible will be given.

Prerequisite: Course 226^a or consent of instructor.

568. Readable Writing and Simplification (2)

W 6:30-8:30. \$14

RUDOLF FLESCH

The course will consist of workshop and lectures in about equal parts. In the workshop students will analyze and rewrite samples of unreadable English. Lectures will deal with the reading habits and abilities of American adults; how we read and understand; how English and other languages express ideas; modern trends in English; easy and difficult language elements; how to test readability; how to simplify; how to use tables, graphs, and illustrations; characteristics of official, legal, technical, magazine, and newspaper styles; the role of simple language in Government.

569. Seminar in Readable Writing (2)

F 6:30-8:30. \$14

RUDOLF FLESCH

An advanced course in writing, based on scientific simplification and readability testing. In addition to class assignments, each student will undertake a major writing or study project.

Prerequisite: Course 568, Readable Writing and Simplification.

[565.] Writing of Documented Papers (2)

HARRY B. HUMPHREY

[227.] Workshop in Government Radio Programs (3 each semester)**SPEECH****228. Fundamentals of Speech (2) Fall**

HESTER B. PROVENSEN

229. Effective Speaking (2)

Tu 6-8. \$12

HESTER B. PROVENSEN

Clear, forceful, and convincing expression is the result of directed practice in a variety of speech situations. This course concentrates on preparation and practice in public speaking and the speech arts. Speeches for special occasions, description, exposition, radio speaking, story telling, and training in the art of conversation. Emphasis is on practice; knowledge of speech fundamentals is presupposed. Enrollment limited to 25.

232. Voice and Remedial Speech (2)

Tu 6-8. \$15

RICHARD R. HUTCHESON

Study and intensive drills in voice production, flexibility, range, articulation, and enunciation. Training and practice are designed to improve vocal conditions for all speech purposes and to remedy minor speech difficulties. In order that students may receive more individual attention, registration is limited to twenty.

43. Personal Development (non-credit)

W 6-8. \$12

HESTER B. PROVENSEN

Discovery and development of the potentialities of each student. Poise, confidence, appearance, make-up, dress and color sense, art of conversation, and cultivation of wider range of interest and curiosity. Actual social situations created and discussed. Conferences, guest speakers.

231. Speech for Business and Government (2)

GEORGE E. BEAUCHAMP

566. Advanced Diction for Executives (2) Fall**567. Principles of Persuasion (2)**

F 6-8. \$14

GEORGE E. BEAUCHAMP

Human motivation as exemplified in basic principles of persuasive thinking is analyzed and practiced in speeches and letters; the influence of emotion rationalization, stereotypes, prejudice, and the will-to-believe are stressed.

IMPORTANCE OF FOREIGN LANGUAGES

In his *Education* Henry Adams says of his experience:

"Had Adams in 1894 been starting in life as he did in 1854, he must have repeated that all he asked of education was the facile use of the four old tools: Mathematics, French, German, and Spanish. With these he could still make his way to any object within his vision, and would have a decisive advantage over nine rivals in ten. Statesman or lawyer, chemist or electrician, priest or professor, native or foreign, he would fear none."

If he were writing today Adams might be willing to add other languages to the list or to permit their substitution for those mentioned. In any case, what he says forcefully indicates the tremendous importance of foreign-language study.

By its spectacular military events and its unprecedented expansion of all kinds of international activities, the war has greatly increased interest in nearly all foreign languages. Research workers, propaganda analysts, persons engaged in all aspects of international relations, and persons scheduled for overseas assignments are in vital need of foreign-language instruction—instruction in many languages little taught before the war, in facility of speech and ease of writing, and in beginning courses, advanced courses, and review courses. All these opportunities are made available through the Graduate School.

It is the aim of those responsible for these courses to conduct them so as to develop in their students a ready and intelligent use of the language. The person who is seeking the maximum practical value from a foreign language must learn not only to translate it but to think in it well enough for translation to be unnecessary. He should acquire a spoken command of at least one language other than his own. No one should be content with a smattering of a language. He should attempt to perfect his skill in it until the language becomes a useful auxiliary means of communication.

—O—

Unless otherwise specified, all foreign language courses are organized as follows:

Elementary year—foundation work in grammar, vocabulary, reading, and translation, with some conversation.

Intermediate year—grammar review, more difficult reading and translation, use of idioms, writing and discussion in the language.

Conversation—development of facility in discussion and reading, use of idioms, writing and thinking in the language without translating.

Note: Course numbers followed by (a) are first-half of that course, or by (b) are second-half.

ARABIC

233^b. Elementary Arabic (2)

F 6-8. \$12

AFIF TANNOUS

233^a. Elementary Arabic (2) Fall

AFIF TANNOUS

234^a. Intermediate Arabic (2) Fall

[235^a.] Conversational Arabic (2)

CHINESE

238^b. Elementary Chinese (4)

Tu-Th 6-8. \$24

I-MIEN TSIANG

An introductory course in the fundamentals of the Chinese language (Mandarin): elements of grammar, reading and writing of Chinese characters, and simple conversation.

240^b. Newspaper Chinese (4)

M-F 6-8. \$24

I-MIEN TSIANG

This course is an introduction to newspaper reading. The text studied consists of selected news items and articles of current interest. Newspaper style will be analyzed, with emphasis on sentence construction, typical phrases, and idiomatic expressions.

Prerequisite: Intermediate Chinese, or its equivalent.

238^a. Elementary Chinese (4) Fall

[239.] Intermediate Chinese (4)

DUTCH

243^b. Elementary Dutch (2)

W 6:30-8:30. \$12

HENRI A. KUYPER

243^a. Elementary Dutch (2) Fall

HENRI A. KUYPER

[244.] Intermediate Dutch (2)

CZECH

248^b. Elementary Czech (3)

Tu-Th 6-7:30. \$18

MILADA F. MARSALKA

248^a. Elementary Czech (3) Fall

MILADA F. MARSALKA

[249^a.] Intermediate Czech (3)

FRENCH

253^b. Elementary French (3)

M-Th 6-7:30. \$18

HARRY B. HUMPHREY

253^a. Elementary French (3) Fall

HARRY B. HUMPHREY

254^b. Intermediate French (3)

Tu-F 6-7:30. \$18

HARRY B. HUMPHREY

254^a. Intermediate French (3) Fall

HARRY B. HUMPHREY

255^b. Conversational French (3)

Tu 6-9. \$18

PAUL L. GRIGAUT

255^a. Conversational French (3) Fall

PAUL L. GRIGAUT

GERMAN

259^b. Elementary German (3)

M 6-9. \$18

JOSEPH PONTI

259^a. Elementary German (3)

F 6-9. \$18

MAX LEDERER

260^b. Intermediate German (3)

W 6-9. \$18

JOSEPH PONTI

260^a. Intermediate German (3) Fall

261^b. Conversational German (3)

M 6-9. \$18

MAGNA E. BAUER

261^a. Conversational German (3) Fall

263^b. German Translation (3)

W 6-9. \$18

IRA T. BRAUNSTEIN

Last hour devoted to conversation.

263^a. German Translation (3) Fall

GREEK

305^b. Elementary Modern Greek (2)

W 6-8. \$12

JAMES MAGIN

305^a. Elementary Modern Greek (2) Fall

JAMES MAGIN

HINDUSTANI

268^b. Elementary Hindustani (Sanskrit script) (3)

M 6:30-9:30. \$18

R. V. GOGATE

269^a. Intermediate Hindustani (Sanskrit script) (3) Fall

R. V. GOGATE

ITALIAN

270^b. Elementary Italian (3)

Tu-Th 6-7:30. \$18

JOHN ROSETTI

270^a. Elementary Italian (3) Fall**271^b. Intermediate Italian (3)**

W 6-9. \$18

MARIO MAIOLATESI

271^a. Intermediate Italian (3) Fall**272^b. Conversational Italian (3)**

M 6-9. \$18

MARIO MAIOLATESI

272^a. Conversational Italian (3) Fall

MARIO MAIOLATESI

JAPANESE

275^b. Elementary Japanese (3)

Tu-Th 6-7:30. \$18

JOSEPH G. YOSHIOKA

275^a. Elementary Japanese (3) Fall**276^b. Intermediate Japanese (3)**

Tu-Th 8-9:30. \$18

JOSEPH G. YOSHIOKA

276^a. Intermediate Japanese (3) Fall

MALAY

[280^a.] Elementary Malay (3)

POLISH

284^b. Elementary Polish (3)

M 6-9. \$18

IRA T. BRAUNSTEIN

284^a. Elementary Polish (3) Fall

[285.] Intermediate Polish (3 each semester)

IRA T. BRAUNSTEIN

PORTUGUESE

290^b. Elementary Portuguese (3)

Tu-Th 6-7:30. \$18

RAUL D'ECA

290^a. Elementary Portuguese (3) Fall

RAUL D'ECA

291^a. Intermediate Portuguese (3) Fall

RAUL D'ECA

RUSSIAN

295^b. Elementary Russian (3) \$18

Sec. I. Tu 6-9.

Sec. II. W 6-9.

GEORGE M. SAHAROV
NATHALIE VON BRETZEL

295^a. Elementary Russian (3) \$18

Sec. I. F 6-9

Sec. II. M 6-9

NATHALIE VON BRETZEL
ERIC T. SCHULER

296^b. Intermediate Russian (3)

W 6-9. \$18

GEORGE M. SAHAROV

296^a. Intermediate Russian (3) Fall

299^b. Advanced Russian (third year) (3)

M 6-9. \$18

GEORGE M. SAHAROV

Reading of selected pieces from Russian literature; writing of compositions; conversation on topics of material read and compositions prepared.

299^a. Advanced Russian (3) Fall

[297.] Conversational Russian

SPANISH

300^b. Elementary Spanish (2) \$12

Sec. I. M 6-8

Sec. II. Tu 6-8

Sec. III. W 6-8

Sec. IV. F 6-8

MANUEL I. ABELLA
RUBERTA M. OLDS
ESTHER R. BROWN
MARGARET WOODS

300^a. Elementary Spanish (2) \$12

Sec. I. Tu 6-8

Sec. II. M 6-8

Sec. III. W 6-8

Sec. IV. Tu 8-10

CONSUELO BATISTA
 MARCUS GORDON BROWN
 MARJORIE C. JOHNSTON
 OLIVIA RUSSELL

301^b. Intermediate Spanish (2)

F 6-8. \$12

ESTHER R. BROWN

301^a. Intermediate Spanish (2)

Tu 6-8. \$12

MANUEL I. ABELLA

302^b. Spanish Conversation and Literature (2)

M 6-8. \$12

ENRIQUE A. GIRO

302^a. Spanish Conversation and Literature (2) Fall**304^b. Commercial Spanish (3)**

F 6-9. \$18

MICHAEL LEVER

Advanced composition in commercial correspondence; commercial geography, monetary systems, certificates and invoices, etc.; cable systems, insurance and banking abbreviations. Designed to give the intermediate student of Spanish familiarity with current commercial correspondence usage and ability to compose acceptable commercial correspondence.

304^a. Commercial Spanish (3) Fall**La America Latina y Los Estados Unidos**

(See Social Sciences 611)

LITERATURE

44. Seminar in the Classics (non-credit)

M 8-10. \$15

IOLA R. SCOFIELD

Seminar discussion of great books in poetry, history, philosophy, and criticism. In the spring term the following books will be read: *The Bible*, *Job*; Aeschylus, *Prometheus Bound*; Homer, *Odyssey*; Plutarch, *Lives* (Alcibiades, Alexander); Plato, *Symposium*; Euripides, *Bacchae*, *Hippolytus*; Thucydides, *History of the Peloponnesian War*, Books I, II; Augustine, *Confessions*; Descartes, *Discourse on Method*; Moliere, *The Misanthrope*, *Tartuffe*; Darwin, *The Origin of the Species*; Marx, *Capital*; and Goethe, *Faust*.

795. Extension Thesis (6 when approved)

Registration fee \$3

M. C. WILSON

An opportunity will be afforded to qualified persons who desire to undertake a study of an agricultural extension problem and to submit a thesis. The amount of credit, to be determined by a thesis committee, will be based upon the nature of the problem, amount of work, and quality of the thesis.

Note: Other courses usually offered in Extension Education are deferred until further notice.

Department of Mathematics and Statistics

DEPARTMENTAL COMMITTEE

- W. EDWARDS DEMING, Ph.D., Adviser in Sampling, Bureau of the Budget (Chairman)
PHILIP M. HAUSER, Ph.D., Assistant Director of the Census
M. A. GIRSHICK, M.A., Principal Agricultural Statistician, Bureau of Agricultural Economics
B. R. STAUBER, M.A., Chief, Relocation Planning Division, War Relocation Authority
O. C. STINE, Ph.D., Head, Division of Statistical and Historical Research, Bureau of Agricultural Economics

OPPORTUNITIES FOR STUDY

To a greater extent than ever before, our country is dependent on the analysis of quantitative data. Action in the solution of problems in industrial and agricultural production requires prediction, which in turn requires skill in the collection, evaluation, and analysis of data, plus knowledge of the subject matter gained through studies of economics, sociology, engineering, or other branches of the natural and social sciences. In industry and in Government service, the demand for valid methods of prediction as a basis for action is placing more and more stringent requirements on statistical methods, as more and more is expected of public programs designed to stabilize or improve economic and social conditions.

The situation in Washington creates an unusual opportunity for students who wish to pursue studies in statistics. For years, Washington has more and more been becoming the center of many activities, political, economic, and scientific. Government statisticians, by the nature of their duties, must make predictions, recommend action, and face the consequences. They are daily faced with exacting realities and responsibilities; they are daily putting their statistical methods to test, and through research are developing new statistical methods to meet new and more exacting requirements. Some of the leading statisticians of Washington are giving courses in the Graduate School.

Employment opportunities are greater now than ever before for people trained in the statistical aspects of various fields of subject matter. The demand ranges from the statistical clerk who may need training in only one or two basic courses, on up to the highest-grade professional statistician who must be thoroughly trained not only in some field of subject matter, but also in higher mathematics and advanced statistical courses. Courses offered in the Graduate School program are designed to afford training at all levels, from

the most elementary to the most advanced, with applied courses in several fields of subject matter.

CERTIFIED STATEMENTS OF ACCOMPLISHMENT

A Certified Statement of Accomplishment is offered in each of four fields of statistical study—fields representing areas of statistical preparation and application most useful in the public service. The required program in each field is outlined below. The student who completes the basic courses and earns 24 credits in specialized courses listed in any column, with substitutions only as specifically approved, is eligible to receive a Certified Statement of Accomplishment bearing the official seal of the School and signed by the Director and the Chairman of the Department of Mathematics and Statistics. The Statement is not a diploma nor simply a transcript of credit, but it combines certain useful features of both. It is a certification that the student has completed a program of study which, in conjunction with collateral training in a subject-matter field of application, prepares him for effective public service in a particular statistical field. Courses completed and the quality of accomplishment will be recorded on the back of the Statement, which may be used as a personal record of achievement or a public record of qualification.

SUGGESTIONS FOR PROGRAMS OF STUDY

The statistical method is the science of discovering assignable causes of variability in measureable phenomena, and of measuring the effect of these causes with the view of making predictions and thus to assist in the rational formulation of courses of action. Statistical work consists of planning and carrying out the collection, classification, analysis, interpretation, and presentation of quantitative data, and of developing methods for improving the precision and reliability of methods for doing this work at the lowest possible cost. The trained statistician is particularly equipped by training and experience to assist in the formulation of scientific courses of action in government, manufacturing, and distribution. He must know when data are needed and how much precision is required. The courses offered on the following pages accordingly provide training not only in theoretical principles, but training also in the administrative and research uses of data, as well as in the collection and processing of data and in the development and supervision of the minor skills necessary for carrying out statistical work.

A fundamental requirement of a good statistician is that he know the subject matter of the field that he is working in. Com-

COURSES LEADING TO CERTIFIED STATEMENTS OF ACCOMPLISHMENT IN STATISTICS

With Concentration in One of the Following Fields of Application

| PROCESSING OF DATA | SOCIAL SCIENCES | BIOLOGICAL AND PHYSICAL SCIENCES | DESIGN AND INTERPRETATION OF SAMPLING SURVEYS |
|---|---|---|---|
| 102. Algebra | 102. Algebra | 102. Algebra | 102. Algebra |
| 124. Graphic Presentation of Data | 103. Trigonometry and Analytic Geometry | 103. Trigonometry and Analytic Geometry | 103. Trigonometry and Analytic Geometry |
| 127. Introduction to Statistical Analysis | 127. Introduction to Statistical Analysis | 126. Introduction to Experimental Design | 106. Calculus |
| | | 127. Introduction to Statistical Analysis | 127. Introduction to Statistical Analysis |
| | | 127. Introduction to Statistical Analysis | |

BASIC COURSES—Required of all candidates

SPECIALIZED COURSES—24 credits, selected from appropriate field of application, required of all candidates

| | | |
|---|---|--|
| 518. Machine Tabulation | 106. Calculus | 500. Advanced Calculus |
| 519. Advanced Study of Tabulating Equipment | 517. Tabulation Procedures | 702. Theory and Practice of Sampling |
| | 520. Statistics of the Federal Government | 708. Linear Algebra |
| 517. Tabulation Procedures | 722. Processing of Sample and Complete Surveys | 712. Theory of Functions |
| 520. Statistics of the Federal Government | 726. Interpretation of Statistical Calculations | 723. Design and Analysis of Complex Experiments |
| 722. Processing of Sample and Complete Surveys | 727. Planning of Statistical Surveys | 735. Theory of Sample Surveys |
| 726. Interpretation of Statistical Calculations | 729. Population Statistics | 739. Multivariate Analysis |
| 727. Planning of Statistical Surveys | 732. Sampling in Social and Economic Surveys | 740. Analysis of Variance |
| 729. Population Statistics | 733. Theory of Sampling | 741. Theory and Application of the Characteristic Function |
| 736. Techniques of Interviewing | 736. Techniques of Interviewing | 742. Modern Theories of Statistics |
| 743. Research Methods in Population and Labor-Force Inquiries | | |

ELECTIVE COURSES

| | |
|--|---|
| 500. Advanced Calculus | 709. Theory of Infinite Processes |
| 502. Differential Equations | 741. Theory and Application of the Characteristic Function |
| 701. Vectorial Geometry | 743. Research Methods in Population and Labor-Force Inquiries |
| 704. Interpolation, Approximation, and Mechanical Quadrature | 744. Modern Theories of Probability |
| 712. Theory of Functions | 745. Modern Analysis of Time Series |

pletion of a particular curriculum of study in statistics will not of itself produce a statistician. The student of statistics, aspiring to obtain a Certified Statement of Accomplishment, is expected to attain competence also in some subject-field such as economics, sociology, biology, agriculture, or engineering. The School will issue a Certified Statement of Accomplishment in statistics only after the Departmental Committee is satisfied that the student has attained such competence in addition to the completion of an approved curriculum of study in statistics.

People who do not intend to become professional statisticians but simply desire to learn the elements of statistics as a tool, or people who desire to train for clerical-statistical positions, should, of course, ignore the requirements for a Certified Statement and concentrate on basic statistical courses suited to their special needs.

The requirements set for statisticians by the United States Civil Service Commission vary with the level of position and the field of work involved. It should be noted that academic training in statistics is not of itself qualifying; where academic background in statistics is necessary there are other additional requirements such as general education, professional specialization, and experience.

It is suggested that those interested in taking courses related directly to their present assignment, and those uncertain as to which courses parallel the level of their training and backgrounds, consult with their supervisors. Attention is called again, in this connection, to the counseling services described on page 6.

SEMINARS IN SAMPLING

Seminars in sampling and statistical inference are held approximately six times a year under the direction of Dr. W. Edwards Deming. These meetings are held primarily for advanced students in the Graduate School, but are addressed and attended by the leading mathematical statisticians in the city. No fee is charged; registration, however, is required. Applications for new admissions to the seminar should be sent in writing to the Director, with a statement regarding the applicant's qualifications for attendance. Notices regarding meetings are sent to those whose names are on the list. The following four meetings were held during the past academic year:

Nov. 2: Lillian H. Madow and William G. Madow, "On a theory of systematic sampling." Chairman, W. Edwards Deming.

Dec. 13: Louis Guttman, "A new theory and method for scaling qualitative data." Chairman, M. A. Girshick.

Jan. 17: Morris H. Hansen and William N. Hurwitz, "On the optimum proportion of interview follow-up on a mailed questionnaire." Chairman, Frederick F. Stephan.

Apr. 11: G. Rupert Gause and Lawrence W. Shaw, "On the estimation of the error arising from random assignable causes." Chairman, Lt. John H. Curtiss.

Course Numbers and Symbols—Below 100, non-credit; 100–499, undergraduate; 500–699, graduate and advanced undergraduate; above 700, graduate. Bracketed numbers, not given this year. Asterisk (*) before numbers, may be applied toward resident credit for advanced degree at American University. Figures in parentheses following the course title indicate number of semester credits.

MATHEMATICS

1. Review of Mathematics (non-credit) Fall

EMIL SCHELL

102. Algebra (2) Fall

103. Trigonometry and Analytic Geometry (2)

M 6-8. \$12

C. H. GRAVES

Definitions in trigonometry; identities; complex numbers; DeMoivre's theorem; trigonometric equations. The study of analytic geometry will include the line, conic sections, and some other plane curves, polar coordinates; families of curves with one or more parameters. Parametric equations of curves. Radial axis. Graphic solution of equations. Some three-dimensional geometry.

Prerequisite: College algebra.

106. Calculus (3 each semester)

W-F 6-7:30 beginning Feb. 14. \$18. Continuation of fall semester

E. J. FINAN

First semester. Variables, functions, limits, continuity, divided differences, derivatives. Application of the derivative to geometry, physics, curve fitting, and analysis. Mean value theorem. The anti-derivative. Riemann integration.

Prerequisite: Algebra and trigonometry and analytic geometry.

Second semester. Standard integral forms. Partial and total derivatives. Constrained maxima and minima in two variables; Lagrange multipliers. Interpolation. Taylor's series with one, two, and three variables. Propagation of errors. Series. Multiple integrals. Line integrals. Approximate integration; the Euler-Maclaurin formula for integration and summation. History and application stressed.

Prerequisites: College algebra, trigonometry, analytic geometry, and the first semester of calculus.

107. Survey of Mathematics (3)

Tu 6-9 beginning Feb. 13. \$18

EMIL D. SCHELL

A course covering the ideas and methods of modern mathematics, designed for students without previous mathematical training in college or for those who have pursued some mathematical studies in college and now wish to unify their learning. Some intellectual maturity will be required. Fundamentals of selected topics of geometry, algebra, and analysis will be covered. Emphasis will be placed upon the content and purpose of mathematical learning by appropriate illustrations from various fields. Text: Courant and Robbins, *What is Mathematics?* (Oxford, 1941).

[500.] Advanced Calculus (1945–46)

E. J. FINAN

***502. Differential Equations (3 each semester)**

W 6:30-9:30. \$21. Continuation of fall semester

RICHARD K. COOK

Offered this and every three years

Calculus will be reviewed as necessary. The course will cover ordinary and partial differential equations with application to physics, economics, and statistics. Solution in series, leading to Bessel functions and other series. Graphical and numerical solutions to ordinary differential equations.

Prerequisite: Calculus.

***504. Methods of Applied Mathematics (2 each semester)**

F 6-8. \$14. Continuation of fall semester

NORMAN DAVIDS

This course will cover the mathematical tools and underlying theory needed for applications to problems in physics and other applied mathematics. Topics: initial and boundary value problems of the potential equation, wave equation, vibrations and characteristic-value problems; the method of solution by expansion into series of orthogonal functions, especially Fourier series, spherical harmonics, and Bessel functions; operational methods, Laplace and Fourier transforms; Green's potentials; integral equations; calculus of variations; numerical methods such as Rayleigh-Ritz and finite differences; applications to electricity and magnetism, radio, stress analysis, etc.

Prerequisite: Advanced calculus, or theory of functions, or differential equations.

[700.] Vector Analysis and Applications (1945-46)

NORMAN DAVIDS

[707.] Statistical Mechanics and Kinetic Theory of Gases (1946-47)

RICHARD K. COOK

708. Linear Algebra (3)

M 7-10. \$21

M. A. GIRSHICK

Offered this and every other year

Determinants. Theory of linear dependence. Linear equations, homogeneous and nonhomogeneous. Matrix algebra; calculation of the inverse matrix; application to linear equations. Linear transformations. Quadratic forms; the matrix and discriminant. Reduction of a quadratic form to a sum of squares. The characteristic equation; definite and indefinite forms. Pairs of quadratic forms, reduction to normal form. Properties of polynomials. Invariants, covariants, half-invariants, and annihilators. Canonical formation of binary cubics and quadratics. Symmetric functions. Elementary divisors. This course is a prerequisite for Multivariate Analysis, Statistics 739.

Prerequisite: College algebra.

NOTE: Mr. Girshick is absent on war work but may return in time to give this course. Prospective students should communicate with the office of the Graduate School after January 20 to obtain definite word. If the course is not given this spring, it will be given a year hence. Analysis of Variance (Course 740), normally to have been offered in the fall of 1944, will be offered in the fall of 1945.

***712. Theory of Functions (2 each semester)**

W 8-10. \$14. Continuation of fall semester

C. WINSTON

Offered this and every three years

Calculus will be reviewed as necessary. Complex numbers, mapping. Branches and singularities; poles and zeros. Theory of limits; sequences. Convergence; uniform convergence. Line, surface, and volume integrals. Expansion by residues. Taylor's and Laurent's series. Fourier series. Analytical

continuation. Bernoulli numbers. Euler numbers. Gamma and Beta functions. Riemann surfaces. Asymptotic expansions. Summability. The hypergeometric equation. Elliptic functions.

Prerequisite: Calculus.

[704.] Interpolation, Approximation, and Mechanical Quadrature (1945-46)

C. WINSTON and W. EDWARDS DEMING

[705.] Thermodynamics (1946-47)

F. G. BRICKWEDDE

[706.] Analytic Mechanics (1945-46)

RICHARD K. COOK

[709.] Theory of Infinite Processes (1946-47)

C. WINSTON

STATISTICS

Beginning Courses

123. Survey of Statistics (3 each semester)

Th 7-10 beginning Feb. 15. \$18. Continuation of fall semester

SAMUEL WEISS

A non-mathematical course designed particularly to train statistical clerks in the statistical treatment of data in the fields of economics, sociology, and business. Algebra is reviewed as required. Operations with symbols. Summarizing data by tabulation and by statistical predictions. The Shewhart control charts. Randomness. Computations and interpretation of statistical functions. Correlation. Business indexes. Trend analysis and curve fitting. Graphic analysis. Lectures and supervised instruction in calculations and table making. Short cuts by the use of charts, multiplication tables, logarithms, slide rule, and other devices.

124. Graphic Methods of Presenting Statistical and Geographic Data (2 each semester)

M 6-9. \$12. Continuation of fall semester

R. G. HAINSWORTH

First semester. Application of various classes, forms, and types of illustrations. Actual working examples in time series charts, frequency diagrams, graphic correlation charts, pictorial symbol charts, and other illustrative examples. Reduction, reproduction and color application in relation to preparation of graphic charts, graphs and diagrammatic illustrations.

Second semester. Interpretation and classification of maps both statistical and geographic. Standards and tolerances as applied to maps; discussion of various methods of preparing maps both statistical and geographic. Actual working layouts of grid systems for the more important projections will be made in class; working examples will also be made of the various types of statistical maps. Color, reproduction, standardization, methods of compiling data, and other important factors relating to general mapping will be discussed.

Prerequisite: An introductory course in statistics, or experience approved by the instructor.

126. Introduction to Experimental Design (2 or 3) Fall

O. A. POPE

127^a. Introduction to Statistical Analysis (2)

Th 6-8. \$12

BENJAMIN J. TEPPIG

The collection of economic and census data; the presentation of data in tables and graphs; different kinds of averages; measures and significances of dispersion; elementary principles of sampling; introduction to index numbers and time series; preparation of formulas for machine calculations. Use of slide rule and charts for performing calculations.

Prerequisite: Algebra.

127^b. Introduction to Statistical Analysis (2)

W 6-8. \$12

C. M. PURVES

A continuation of Introduction to Statistical Analysis 127^a. Problems in the relations between two or more variables. Association, correlation, and regression, leading into multiple and partial correlation. Introduction to statistical inference. Adaptation of formulas to machine correlation.

*Intermediate Courses***516. Intermediate Statistics (2 each semester)**

Th 6-8. \$14. Continuation of fall semester

FRANCIS P. HOEBER

After a review of elementary principles and methods, a critical study is made of various topics, the purpose being to lay a foundation for effective work in statistical practice and for advanced study. Special attention is given to sampling and the uses of sample data.

Prerequisite: Statistics 127.

[517.] Tabulation Procedures

JAMES L. MCPHERSON

518. Machine Tabulation (1)

W 5-7. \$9

MILTON KAUFMAN

Registration limited to 30. Given in Rm. 2115 at the Census Building, Suitland. Registration may be made either at the Census or Graduate School.

The punch card method. Functions of the principal machines. Instruction covers actual wiring of all types of I.B.M. tabulating equipment. Use of cards to obtain sums of squares and cross products in correlation and curve fitting is demonstrated.

519. Advanced Study of Tabulating Equipment (1)

F 5-7. \$9

MILTON KAUFMAN

Given in Rm. 2115 at the Census Building, Suitland. Registration may be made either at the Census or Graduate School.

The solution of difficult problems in the application of tabulating equipment. The instruction includes the actual operation and wiring of the principal machines involved.

Prerequisite: A course in machine tabulation.

520. The Statistics of the Federal Government (2 each semester)

Tu 6.30-8:30. \$14. Continuation of fall semester

MORRIS B. ULLMAN

Designed to give acquaintance with the wealth of data available from Federal agencies. Attention will be paid to the methods used by different agencies for the collection of data; comparisons of biases, definitions, and basic concepts; different methods of presentation.

Prerequisite: Statistical experience in industry or Government service.

*Advanced Courses***702. Theory and Practice of Sampling (3 each semester)**

Th 7-10. \$21. Continuation of fall semester

W. EDWARDS DEMING

Applications to problems in population sampling, inventories, sociology, biology, agriculture, and industrial control of quality. The Shewhart criterion of randomness. Control charts. Statistical methods for reducing inspection, reducing rejections, and setting tolerances. Single, double, and multiple sampling for acceptance purposes. The point binomial, Poisson exponential, the Type III and normal limits. Student's distribution. Use of the Gamma and Beta functions. Fisher's distributions; analysis of variance. Various tests. Errors of the first and second kinds (Shewhart, Neyman-Pearson). Bayes and inverse probability. Confidence intervals and fiducial probability. Conditions necessary for validity. Interpretation of results; history.

Prerequisites: Calculus, an intermediate course in statistics, and experience.

[722.] Processing of Sample and Complete Surveys (1945-46)

HOWARD G. BRUNSMAN

[727.] Planning of Statistical Surveys (1946-47)

A. J. JAFFE

726. Interpretation of Statistical Calculations (2 each semester)

M 6-8. \$14. Continuation of fall semester

ALEXANDER STURGES

Offered this and alternate years

First semester. The philosophy and assumptions involved in statistical inference from sampling data. The conditions of sampling will be stated and compared with practical situations. The effect of failure to meet the ideal conditions will be studied. Methods will be offered for deciding whether the sampling conditions depart too far from the ideal.

Second semester. The selection and use of statistical tests. The illustrative problems will deal with single and multiple attributes. Time series will be discussed in the light of some new methods.

Prerequisite: Introduction to Statistical Analysis, 1st and 2d half; college algebra, and analytic geometry.

708. Linear Algebra (3)

M 7-10. \$21

M. A. GIRSHICK

For the outline and special notes regarding this course, see description under Mathematics.

[732.] Sampling in Social and Economic Surveys

J. STEVENS STOCK and LESTER FRANKEL

735. Theory of Sample Surveys (2 each semester)

W 8-10. \$14. Continuation of fall semester

WILLIAM HURWITZ and WILLIAM G. MADOW

Offered this and every other year

History of sampling in social surveys. The use of statistical control in improving the quality and efficiency of the estimates. Calculation of sampling errors. Random, stratified random, purposive, double and systematic sampling. Cost function, choice of sampling unit; size and type of sample necessary to attain a stated degree of precision, and the distinction between precision and ac-

curacy. The theory of probability is developed as necessary. The contributions of Fisher, Neyman, Yates, Cochran, and others are studied.

Prerequisites: Introduction to Statistical Analysis, 1st and 2nd half; calculus.

[740.] Analysis of Variance (Fall, 1945-46)

M. A. GIRSHICK

745. Seminars in Sampling and Statistical Inference

W. EDWARDS DEMING

Notices regarding meetings are mailed to those who are registered. See the special announcement on page 30.

[723.] Design and Analysis of Complex Experiments

A. E. BRANDT

[731.] Least Squares and Curve Fitting

W. EDWARDS DEMING

[733.] Theory of Sampling (1945-46)

JEROME CORNFELD and W. D. EVANS

[734.] Statistical Methods for Research Workers (1946-47)

WILLIAM G. MADOW and WILLIAM HURWITZ

[736.] Techniques of Interviewing and Questionnaire Construction (Fall, 1945-46)

CHARLES F. CANNELL

[739.] Multivariate Analysis (1946-47)

M. A. GIRSHICK

[741.] Theory and Application of the Characteristic Function

SOLOMON KULLBACK

[742.] Modern Theories of Statistics

JOSEPH DALY

[743.] Research Methods in Population and Labor-Force Inquiries (1945-46)

A. J. JAFFE

[744.] Modern Theories of Probability and Statistical Inference (1945-46)

WILLIAM G. MADOW

[747.] Modern Analysis of Time Series (1946-47)

WILLIAM G. MADOW

Labor Statistics¹ (3)

Th 8:20-10:30. \$30

JACOB PERLMAN

¹ American University course. See A.U. catalog.)

Department of Office Techniques and Operations

DEPARTMENTAL COMMITTEE

HENRY A. DONOVAN, Assistant Chief, Bureau of Agricultural and Industrial Chemistry (Acting Chairman)
HAROLD CLARK, Ph.D., Chief, Training Section, Division of Personnel Management, Agricultural Adjustment Agency
VIVIA A. FORD, B.S., Administrative Assistant to the Director, Office of Food Programs, Foreign Economic Administration
STROTHER B. HERRELL, Assistant Director of Personnel, Office of Personnel
JOHN S. LUCAS, Assistant Chief, Office of Plant and Operations

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Course Numbers and Symbols—Below 100, non-credit; 100–499, undergraduate; 500–699, graduate and advanced undergraduate; above 700, graduate. Bracketed numbers, not given this year. Figures in parentheses following the course title indicate number of semester credits.

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CLERICAL-ADMINISTRATIVE PROCEDURES

The courses described under Clerical-Administrative Procedures are closely related to those offered in the Department of Public Administration and are an integral part of the program leading to the Certified Statement of Accomplishment in Administrative Procedures (see Department of Public Administration for details). They are practical, how-to-do-it courses chiefly of interest to persons in grade CAF-7 positions, or below, who are either working with these procedures, or who hope to train themselves for such positions, or positions requiring some familiarity with more than one of these procedural subjects (e.g., administrative assistants and head clerks).

408. Administrative Procedure (2)

Sec. I. Tu 6-8. \$12

THOMAS J. HICKEY

Sec. II. F 6-8. \$12

ROBERT R. EVANS

Intended for persons who wish to become Head Clerks or Administrative Assistants and who wish to organize their knowledge and experience in this field with that in view. Deals with practical aspects of the day-to-day operations of the chief clerk and administrative assistant. Emphasis is placed upon matters for which these persons ordinarily are responsible, such as preparation of budget data, procedural planning, personnel actions, orientation and assignment of new employees, and supervision. The relationship of these functions to specialized services offered by the central personnel, budget, and general service units are also discussed.

410. Federal Auditing Procedure (2)

Tu 6-8. \$12

CAREY G. CRUIKSHANK

This short, intensive course is designed particularly to train audit clerks drawn from among employees now working in the lower grades as clerks; typists, machine operators, etc., and to assist audit clerks in their present and prospec-

tive positions. It embraces explanations of, discussions on, and practice work with the most important types of Government vouchers and covers certain related procedures and documents. The manual used outlines in detail the various procedures.

The course covers general basic principles and definitions of terms; use of standard forms involved; General Accounting Office exceptions, and preparation of replies thereto; administrative suspensions and disallowances; application of statutes, regulations and the Comptroller General's decisions to auditing; special correspondence required in connection with such work; claims and adjustments; purchase order procedures; tax exemption; letters of authorization and travel authority; per diem allowances and computations; methods of travel; and the actual audit of Standard Form 1012 "Reimbursement" vouchers and Standard Form 1034 "Purchase" vouchers.

Note: Persons who want a short, sped-up approach limited to minimum requirements should take this course. Persons who want more thorough training and a more comprehensive coverage of auditing procedures should take the full-year course beginning September, 1945.

411. Auditing Procedure (2 each semester)

M 6-8. \$12

CAREY G. CRUIKSHANK

Similar to the course above but more thorough in treatment of the subject. Designed to assist audit clerks in present and prospective positions and to enable Government employees working in the lower grades as clerks, typists, etc., to fit themselves for more responsible and remunerative positions. It embraces explanations of, discussions on, and practice work with all types of Government vouchers and related documents. The manual used outlines in detail all the various procedures. During the first semester, the course covers general principles and definition of terms; use of Standard Forms involved; purchase vouchers; claims and adjustments; General Accounting Office exceptions; formal and informal contracts; relation of procurement to auditing; tax exemptions; transportation vouchers; suspensions and disallowances on all types of vouchers. During the second semester, the course covers letters of authorization and travel authority; per diem computations and allowances; methods of travel; reimbursement vouchers; pay rolls; advertising vouchers; adjustment vouchers; application of statutes, regulations and Comptroller General's decisions to auditing; collections and deposits; preparation of replies to General Accounting Office exceptions, and correspondence in connection with auditing.

412. Federal Accounting Procedure (2)

Tu 6-8. \$12

CHARLES L. GRANT

Designed particularly to train accounting clerks through instruction of employees now working in lower grades and to assist accounting clerks in present and prospective positions. It embraces explanation of, discussion on, and practice work with the basic ledgers (allotment ledger, objective classification ledger, and general ledger) maintained in connection with funds made available to Federal agencies. Appropriation, apportionment, allotment, disbursement, collection, and reporting processes will be discussed and the relationship between administrative accounts and accounts kept by the Treasury Department and the General Accounting Office explained. (A more advanced course, Federal Government Accounting, is offered in the Department of Public Administration.)

413. Office Management (2)

F 6-8. \$12

DANIEL M. BRAUM

Includes office layout, office housekeeping methods, formulation of office policy, organization of communications and records, work planning and operational analysis, utilization of available facilities, care and operation of office equipment, employee orientation and supervisory techniques, methods of securing employee participation, work evaluation and employee rating. The reference text is *Textbook of Office Management* by Leffingwell and Robinson.

414. Federal Personnel Procedure (2)

F 6-8. \$12

VERNA C. MOHAGEN

Deals with basic practices and procedures designed to accomplish appointment, transfer, promotion, demotion, separation, and retirement of Federal employees. The course has three objectives: (1) to keep abreast of current developments in personnel procedures; (2) to become familiar with the legal and administrative background of such procedures (statutes, executive orders, decisions of the Comptroller General, the Civil Service Commission, and the War Manpower Commission, Administrative Orders, etc.); and (3) to visualize the constant need for streamlining procedures in the interests of simplicity and efficiency.

415. Federal Purchasing Procedure (1) Fall

RAY WARD and STAFF

417. Records Management Procedure (2)

Tu 6-8. \$12

L. E. DONALDSON, WILLIAM MULLER, and C. T. SMITH

The course embraces instruction in (1) communications, including mail handling, telegrams, messenger service; (2) records management, including planning of procedure in records units, subject filing, classification techniques, briefing and cross indexing, sorting and preparation of material folder and guide arrangement, retirement of material to inactive status, searching, tickler systems, arrangement of offices, equipment, and filing materials.

ENGLISH FOR LETTERS AND REPORTS**418. Practical English Usage (2)**

M 6-8. \$12

HELEN W. WILLIAMS

This course enables students through practice to master the fundamentals of correct English. Troublesome problems of English usage, sentence structure, choice of words, style, and grammar, are studied as aids to clear and forceful writing of letters, memoranda, and reports.

419. Vocabulary Building (2)

M 6-8. \$12

SALLIE M. PEASE

Designed to help writers and speakers express ideas clearly and attractively. It embraces word study and selection, diacritical markings, synonyms and antonyms, prefixes and suffixes, usage exercises, and other means of developing a broad and useful command of words.

420. Government Letter Writing (2)

Tu 6-8. \$12

VERNE L. SAMSON

Accurate, clear, concise, courteous letters from Government agencies to citizens are a practical contribution to efficiency and economy in Government. This course gives students an opportunity to work out the principles of writing effective letters. Practice in writing and in class discussion of fundamental principles of writing covers the analysis of incoming letters and planning, drafting, and revising replies. Troublesome questions of grammar, idiom, sentence construction, and paragraphing are discussed.

421. Workshop in Effective Government Writing (2)

F 6-8. \$12

VERNE L. SAMSON

Development of clear and forceful expression in reports, letters, memoranda, and other media is the objective of this course. It is a clinic course in which classroom discussion is based upon material written by members of the group.

Emphasis is placed on increased skill of expression; planning and organizing material; using words appropriately; effective sentence structure and paragraphing; and related factors. Assignments are made in both reading and writing. Persons taking this course should have had courses in Practical English Usage, Vocabulary Building, Letter Writing, or their equivalent.

(See Language and Literature for other courses in English, Writing and Editing.)

SECRETARIAL PRACTICES

425. Secretarial Practices (2) Fall

MILDRED R. STEPHENS

426. Advanced Secretarial Practices (2)

Th 6-8. \$12

ALICE COFFMAN

This course emphasizes techniques of effective performance of non-stenographic duties and responsibilities of the secretary; personal qualities necessary for the private secretary; amenities of the vocation; and relation of the principles of secretarial work to office organization. Classroom discussions are supplemented by actual secretarial practice.

Prerequisite: Secretarial Practices or equivalent.

SHORTHAND

These courses are designed to furnish Federal employees an opportunity to follow a program of training for stenographic careers in the Federal service. While each course represents a separate unit of study, with emphasis on material used in the Federal service, the proper sequence of courses insures a sound foundation for successfully qualifying for the various grades and classifications of stenographers in the Federal service.

Gregg courses designated "functional" differ from other courses in the method of study. The functional method is the reading approach; familiarity with the outlines of the system is gained by reading and writing a large volume of graded material. The standard, or manual, method is the traditional method of studying the principles for writing the outlines, practicing the outlines, and reading and writing them from dictation. Under each system home study is required to attain goals set in course descriptions. Amount of study required varies according to the learning habits and individual goals of students.

Students finishing the beginning functional class may continue with intermediate functional or take a manual theory review. Either "Intermediate Functional" or "Gregg, 70 to 100 Words" will serve equally well as rapid review for the student who has not applied his shorthand knowledge for a long time, or has used it so little that he feels uncertain about applying his knowledge to practical office dictation. Because the "Gregg, 100 to 130 Words"

course is an intensive course on technical material, students should have a sound foundation in theory and be able to write 100 words a minute with a 95 percent accurate transcript before registering for this course.

As a general guide to assist employees who wish to plan a course of study to build for a stenographic or stenographic-reporting career in the Federal service the following parallels are drawn:

| <i>Course</i> | <i>Goal</i> | <i>Prerequisites</i> |
|---|--|---|
| I. BEGINNING GREGG (Functional) BEGINNING GREGG (Manual) | Knowledge of theory, with writing ability of 80 words a minute on familiar material | For those who have not studied shorthand, or for those who have some knowledge of shorthand but have not completed a theory course |
| II. INTERMEDIATE GREGG (Functional) GREGG, 70 to 100 words PITMAN, 70 to 100 words | Theory review; 80 to 100 words a minute on new, standard material | For those who have completed a course in I or an equivalent theory course, or for those who have lost writing facility through limited use or long disuse |
| III. GREGG, 100 to 130 words PITMAN, 100 to 130 words | Ability to take difficult dictation at rapid rate; to record full secretarial report of conferences; and to record telephone conversations | For those who have completed a course in I and II or equivalent theory and dictation courses, and who have a minimum speed of 100 words on new, standard material |
| IV. GREGG, 140 to 200 words | Recording of conferences, hearings, 50 percent verbatim (or more); beginning reporting | For those who have qualified on 140 standard word test |
| V. GREGG, 160 words and up | Verbatim reporting | For those who have qualified on 175 word standard test or 160 word test plus additional experience and training |

Indicate Section when Registering

429. Beginning Gregg (Functional) (3)

Sec. I. M-Tu-Th 6-7. \$18

Sec. II. M-Tu-Th 7-8. \$18

ANNA C. BOLTON

428. Beginning Gregg (Manual) (3)

Tu-W-F 6-7. \$18

NAOMI H. EVANS

430. Intermediate Gregg (Functional) (3)

Tu-Th 6:30-8. \$18

ARTHUR S. PATRICK

431. Gregg, 70 to 100 Words (2)

Tu 6-8. \$12

ALICE COFFMAN

433. Pitman, 70 to 100 Words (2)

Tu 6-8. \$12

LOUISE C. BARRY

432. Gregg, 100 to 130 Words (2)

W 6:30-8:30. \$12

ARTHUR S. PATRICK

434. Pitman, 100 to 130 Words (2)

F 6-8. \$12

LOUISE C. BARRY

435. Reporting—Gregg, 140 to 200 Words (4) Fall

JACK ROMAGNA

436. Advanced Reporting—Gregg, 160 Words and Up (4)

M-W 7-9. \$24

JACK ROMAGNA

438. Shorthand in Spanish (2) Fall

SOFIA KRISSILLAS

439. Advanced Shorthand in Spanish (2)

Tu 6:30-8:30. \$12

SOFIA KRISSILLAS

Dictation of business letters and commercial articles on Latin American subjects; reading of notes; incidental review of Spanish Gregg Shorthand Manual.
Prerequisite: Course 438 or equivalent.

Department of Physical Sciences

DEPARTMENTAL COMMITTEE

CHARLES E. KELLOGG, Ph.D., Chief, Division of Soil Survey, Bureau of Plant Industry, Soils, and Agricultural Engineering (Chairman)
RICHARD E. MCARDLE, Ph.D., Assistant Chief, Forest Service
ORVILLE E. MAY, Ph.D., Chief, Bureau of Agricultural and Industrial Chemistry
A. K. SHOWALTER, A.B., Meteorologist in Charge, Hydrometeorological Section, Weather Bureau
HAZEL K. STIEBELING, Ph.D., Chief, Bureau of Human Nutrition and Home Economics

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Course Numbers and Symbols—Below 100, non-credit; 100–499, undergraduate; 500–699, graduate and advanced undergraduate; above 700, graduate. Bracketed numbers, not given this year. Figures in parentheses following the course title indicate number of semester credits.

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[144.] History of Science

PAUL R. HEYL

145. Navigation (3)

F 6:30-9:30. \$18. (Materials and books cost about \$6.) JOHN T. LOKERSON

Limited to 20, this course concerns essential principles of practical navigation, "off soundings" (exclusive of inland and coastal piloting, which is covered in Piloting).

Dead Reckoning: Includes definitions, charts, plotting, records, allowance of errors of the magnetic and gyro compasses, ocean currents, and plane, mid-latitude, Mercator, and Great Circle sailing.

Celestial Navigation: Includes fundamental definitions and principles of astronomy underlying the navigation of ships and aircraft; usage of the sextant and chronometer, time, and the nautical almanac, corrections of observed altitudes, the determination of latitude and of position at sea by lines of position computed by H.O. 211 using G.H.A., and identification of unknown navigational stars.

Prerequisite: High-school trigonometry and logarithms.

[146.] Piloting

CHEMISTRY

147. General (Inorganic) Chemistry (2 each semester)

F 6-8. \$12

ROSCOE H. CARTER

Refresher course designed for students who desire a general knowledge of the subject and those who wish to bring their knowledge up to date. Aim of the course is to give students a better comprehension of the chemical aspects of our environment. The course consists of a series of lectures covering the concepts, principles, facts, and applications of general chemistry. Some organic chemistry is included. No individual laboratory work.

Prerequisite: First semester or equivalent.

148. Organic Chemistry (2 each semester)

Th 6-8. \$12

C. VERNE BOWEN

Fundamental principles of general organic chemistry are reviewed. Such topics as classification, nomenclature, type reactions, and structure will be considered. Historically important discoveries are correlated with the development of the subject, and emphasis is placed upon the treatment of compounds or classes of compounds that are industrially, medically, or biologically important. The first semester is devoted to consideration of the aliphatic series; the second semester to the aromatic and heterocyclic series. Recent progress in the chemistry of sterols and vitamins is given.

Prerequisite: First semester or equivalent.

[149.] Physical Chemistry (2 each semester)

WALTER J. HAMER

150. Food Technology (3)

W-F 6:30-8:00. \$18

HARRY W. VON LOESECKE

This course outlines the processes used in the modern food industry. It deals with the canning and preservation of fruits and vegetables; dairy products; meat, meat products and poultry; fish and shellfish; grains and their products; yeast; edible fats and oils; sugars and starches; nuts; spices; essential oils; beverages; confectionery; dehydration and freezing; storage of foods. Von Loescke's *Outlines of Food Technology* will serve as a general guide.

Prerequisite: One year general chemistry.

522. Physiological Chemistry (2 each semester)

W 6-8. \$14

HERBERT O. CALVERY

Lecture course on principles of biochemistry. It deals with the chemistry of proteins, fats, and carbohydrates, general chemical composition of animal tissues, e.g., muscle, nerve, milk, and blood; brief discussion of enzymes of the gastro-intestinal tract; digestion and absorption of principal foodstuffs; metabolism of proteins, fats, and carbohydrates; mineral metabolism; chemical constituents of urine; and general discussion of the chemistry and physiology of the vitamins and hormones concludes the course.

Prerequisite: First semester or equivalent.

532. Geochemistry (2 each semester)

W 6-8. \$14. New students admitted with consent of instructor

HARDEE CHAMBLISS

After a brief review of pertinent principles of geology, physics and chemistry, the discussion will be primarily concerned with universal matter: the composition of the sun, of other stars, of other planets than our own, and of the crust of the earth.

Evidence will be presented concerning the composition of the core of the earth, the general character of the rocks as we pass outward from the core to the surface and the mineralogical composition of these rocks. Then will follow such topics as the internal heat of the earth, vulcanism and lavas, gases in rocks, the waters of the earth, the atmosphere and the (weathering) effects of these two agents on rocks to produce soils.

During the second semester the work will be more advanced in that the application of elementary physical chemistry to such problems as magmatic differentiation, the migration of underground materials, the genesis of ore deposits, metasomatism, accumulations of coal, of gas and of oil, will be taken up. The economic aspects of such deposits and accumulations will receive attention as will also the applications not only of geochemistry but also, to a limited extent, of geophysics to underground exploration for oil, etc.

Prerequisites: At least one year of college chemistry plus a year of college physics or geology, preferably both.

762. Electrochemistry (2 each semester)

W 6-8. \$14

WALTER J. HAMER

Lecture course on fundamentals of electrochemistry. It deals with a study of coulometers, laws of electrolysis, electrolytic conductivity transference numbers, mechanism of galvanic cells, electrode potentials, potentiometric and conductometric titrations, polarograph, diffusion currents, electrokinetic phenomena including electrophoresis and electro-osmosis, ionization constants, determinations of pH or hydrogen-ion activity, and the passivity and overvoltage of electrodes. Problems involved in deposition and corrosion of metals, and factors involved in electroplating, electroanalysis, electropolishing, and in electrolytic oxidation reduction are studied briefly.

Prerequisite: First semester or equivalent.

Glass Blowing

(See Engineering and Mechanical Arts 188)

GEOGRAPHY AND GEOLOGY**[150.] Physiography of the United States**

C. F. STEWART SHARPE

[151.] Geography of the Pacific Islands

F. RAYMOND FOSBERG

[168.] Physical Climatology and Geography

LYLE R. FLETCHER

Economic Geography

(See Social Sciences 613)

METALLURGY**152. Principles of Physical Metallurgy (2) Fall**

BLAKE M. LORING

525. Production Metallurgy (2) Fall

BLAKE M. LORING

526. Advanced Physical Metallurgy (2)

W 8-10. \$14

BLAKE M. LORING

Basic concepts of the physics of metals are discussed in order to develop a better understanding of the common mechanical tests and manufacturing processes. Topics include: definition of a metal; introduction to the crystalline nature of matter; classification of metallic elements according to crystalline structure; relationship between crystalline structure and physical properties; the equilibrium diagram and its relation to physical properties and crystalline structure; introduction to X-ray metallography with calculations from diffraction patterns of metals (illustrated); X-ray evidence of cold working and recrystallization; interval stresses in metals; plastic deformation; theory of metal hardening, ferrous and non-ferrous; advanced physical testing of metals covering fatigue, creep,

and damping capacity. The class selects for discussion manufacturing processes of most general interest.

540. Engineering Alloys (2)

W 6-8. \$14

BLAKE M. LORING

Manufacture, heat treatment, physical testing, and engineering usage of plain carbon, alloy, and special steels, brasses, bronzes, and the light alloys of aluminum and magnesium. Recent trends in specifications of alloy properties are included. Alloys for aircraft receive special attention.

SOIL SCIENCE

156. Soil Conservation (2) Fall

J. GORDON STEELE

157. Soil Fertility (3) Fall

J. K. ABLEITER

[531.] Soils: Their Morphology, Genesis, and Classification (3)

CHARLES E. KELLOGG

[767.] Seminar: Soils and Planning

CHARLES E. KELLOGG

METEOROLOGY

With the growing importance of aircraft operations in military and civilian activities, meteorology is undergoing a rapid expansion. Before proceeding on his flight, the pilot must consult the meteorologist regarding upper-air winds, cloud ceiling, threat of icing and thunderstorms, etc., along his route. Interest in meteorology has increased greatly recently and it is expected that the study of meteorology will assume greater importance in the future.

The course in Elementary Meteorology is intended for persons who desire a general outlook in meteorology and who are not interested in becoming professional meteorologists. The remaining courses are intended to give a fundamental and comprehensive meteorological background for persons interested in pursuing a career in meteorology. It is suggested that the courses be taken in the general order in which they are listed.

A course in Introductory College Physics is offered for those who need it as a foundation for study in meteorology (see Physics 153).

162. Principles of Meteorology (2 each semester)

Tu 6-8. \$12

GARRETT DE MOTS and CHARLES B. JOHNSON

A course of a descriptive nature explaining the principles of meteorology essentially on a non-mathematical basis. Especially adapted to preparation for

sub-professional employment in the Government and to obtaining the basic meteorological knowledge required of a civilian pilot.

Prerequisite: First semester or equivalent.

159. Physical and Synoptic Meteorology (2 each semester)

M 6-8. \$12

ALEXANDER L. SHANDS

A course designed for those interested in a career in meteorology. Among the topics covered are: composition and structure of the atmosphere; adiabatic processes; general circulation; air masses and fronts; cyclones and anticyclones; fog; hurricanes; thunderstorms; weather forecasting. Problems involving fundamental units and graphic manipulation are assigned.

Prerequisite: First semester or equivalent.

163. Comparative Meteorology and Oceanography (2) Fall

WOODROW C. JACOBS

529. Weather Analysis and Forecasting (3 each semester)

M-W 6-8. \$21 plus \$3 laboratory fee A. K. SHOWALTER and SIDNEY TEWELES

Lectures and laboratory. This two-semester course is the natural sequel to Physical and Synoptic Meteorology and provides practical experience in the analysis of various weather charts of sea level and the upper air. Considerable practice is given in preparing weather forecasts from various sea-level, upper-air and local surface data.

Prerequisite: First semester or equivalent.

[534.] Introduction to Dynamic Meteorology (2 each semester)

JAMES E. WALSH

[527.] Elementary Statistical Analysis for Meteorologists (2 each semester)

HERBERT C. S. THOM

[155.] Elementary Synoptic Weather Analysis

A. K. SHOWALTER and W. M. ROWE

[158.] Elementary Meteorology

CHARLES B. JOHNSON

[160.] Meteorological Instruments and Observation

[161.] Preparation of Meteorological Charts

[164.] Hydrology (2)

F. F. SNYDER

[533.] Advanced Hydrology (2)

F. F. SNYDER

[537.] Physical Climatology and Geography (2)

[765.] Dynamic Meteorology

PHYSICS

153. Introductory College Physics (3 each semester)

Tu-F 6:30-8:30. \$18 and \$3 laboratory fee

RALPH B. KENNARD

This course is intended for those having no previous knowledge of the subject, and for those who wish to review the elements. The class meets in the well-equipped laboratory of Wilson Teachers College.

Second semester: Electricity—light—electronics.

Prerequisite: First semester or equivalent.

530. Introduction to Hydrodynamics (2) Fall

MARTIN A. GARSTENS

705. Thermodynamics (1945-46)

RICHARD K. COOK

706. Analytic Mechanics (1945-46)

Department of Public Administration

DEPARTMENTAL COMMITTEE

LEON O. WOLCOTT, LL.B., Liberated Areas Branch, Foreign Economic Administration (Chairman)
H. DEAN COCHRAN, B.S., Chief, Division of Personnel Management, Forest Service
VERNE B. LEWIS, M.A., Assistant to the Director of Finance, Office of Budget and Finance (on military leave)
JOHN THURSTON, Ph.D., Administrative Council, USDA
DEWITT C. WING, Senior Information Specialist, Office of Information

OPPORTUNITIES FOR STUDY AND WORK

The modern state truly is as its officers are. Competence of personnel, especially managerial personnel, is an urgent present need and an obvious post-war imperative. Assuring and adding to that competence is the sole objective of the Graduate School.

The importance of public administration is apparent in the modern state with its emphasis on services, control, operation, and collective action in the public interest. The more the public service is called upon to assume functions previously exercised by individuals or private enterprise, the greater the importance of the principles and techniques of public administration. The unprecedented and increasing delegation of discretion to administrative agencies has raised unprecedented problems of organization, public consent, and administrative responsibility.

Washington is of necessity the national focal point of all these developments. Many of the ablest and most experienced public administrators are assembled in Washington. Many of the most competent practitioners of the various specialized branches of administration are likewise concentrated in Washington. Utilizing this unique environment and this unexcelled talent, the Graduate School offers courses geared to demonstrated needs and taught by experienced administrative personnel.

Management problems raised by the war, and aggravated by leave of administrative personnel for military duty, have created an unparalleled demand for trained men and women in all branches of administrative management. The situation has resulted in recruitment of persons from private industry, appointment of persons not so well trained and experienced as in normal times, and the promotion in some cases of meagerly trained personnel at an unusual rate. This is obviously not a normal situation, but it nevertheless illustrates the critical need for more and better training in public administration, particularly in the junior and assistant positions, even in normal times.

SUGGESTIONS FOR PROGRAM OF STUDY

The following courses cover a wide range of approaches for varying levels of responsibility. Some give background and attitude, and some give methods and skill. Some have their objectives high and broad for perspective and knowledge of relationships; some have their objectives comparatively narrow and sharply focused for skill and ability to perform particular tasks. It is hoped that students will select those courses which supplement and complement their work assignments rather than concentrate exclusively on more intensive training in the performance of daily tasks.

General. Persons who have not had such a course, or varied administrative experience, should begin with Introduction to Public Administration. This course and other basic work should precede courses in special branches of administration (e.g., personnel or financial administration) in order that such courses may be of maximum usefulness.

Personnel Administration. Unless substantial experience can be substituted, the general course, Personnel Administration, should be taken before the specialized courses (such as Position Classification, Selection and Placement, etc.). Persons who are in positions classified as Grade CAF-5 or below and desire to prepare for personnel work should take Federal Personnel Procedure at the earliest opportunity; they should not attempt to take the specialized courses until they have gained substantial experience in personnel work or have carefully laid a foundation by completing all basic, general courses.

Financial Administration and Purchasing. Budget Formulation logically precedes Budget Execution. In purchasing, students qualified to work toward the program for a Certified Statement of Accomplishment in Public Administration should take Governmental Purchasing. It is desirable for other students to take Purchasing Procedure first.

Accounting and Auditing. Students in classification grades below CAF-5 will find it advantageous to begin with Federal Accounting Procedure or Federal Auditing Procedure. Preparation for higher-level accounting should begin with a year's study of Principles of Accounting, after the completion of which Federal Government Accounting may be taken. Second Year Accounting, Cost Accounting, Auditing, Federal Tax Accounting, Advanced Accounting Problems, and Analysis and Interpretation of Financial Statements provide advanced training for those who desire to progress further with a general accountancy program. (See program below for Certified Statement of Accomplishment.)

CERTIFIED STATEMENTS OF ACCOMPLISHMENT

Certified Statements of Accomplishment are offered in two fields of public administration—fields representing areas of preparation and application most useful in the public service—and in accounting.

The student who completes one of the programs outlined below is eligible to receive a Certified Statement of Accomplishment bearing the official seal of the School and signed by the Director of the School and by the Chairman of the Department of Public Administration. The Statement is not merely a diploma-like certificate nor simply a transcript of credit, but combines certain features of both. It is a certification that the student has completed a well-rounded course of study preparatory for effective public service in (1) administrative procedures, (2) public administration, or (3) accounting. Courses completed and quality of accomplishment will be recorded on the back of the Statement, which may be used as a personal record of achievement or a public record of qualification.

Certified Statements of Accomplishment are offered in the three fields described below.

I. PUBLIC ADMINISTRATION

Approach

Broad-gauge, essentially long-range approach to develop leadership, perspective, broad outlook, and understanding of the human factors in administration; emphasis on principles, with opportunity for study of some techniques in relation to policy.

Objectives

Ultimately, for policy formulation, improvement of administrative machinery, coordination of operations, and general management and control of large units. Immediately, for initial investigations as a junior member of a staff having the responsibilities named above, for assumption of increasingly difficult and more responsible assignments in these fields, and for supervision and management of small units.

Requirements

1. Bachelor's degree or equivalent. (Note: This requirement may be waived in the case of well-qualified students who have received a Certified Statement of Accomplishment in Administrative Procedures.)
2. Sixteen semester hours of credit in Graduate School courses in public administration, with at least four credits in each of the following fields:

- a. General Administration (courses in introductory public administration, Federal administrative management, scientific management, organization, administrative law, public relations, management psychology, etc.).
- b. Personnel Administration (courses in introductory personnel administration, position classification, selection and placement, counseling, training, employee relations, etc.).
- c. Financial Administration (budget formulation, budget execution, governmental purchasing, governmental accounting, etc.).

The program leading to a Certified Statement of Accomplishment in Public Administration should be of special interest to:

1. Persons already employed in responsible administrative positions. Included in this group are many with specialized training who have been transferred to administrative positions from professional positions without training or previous experience in administration.
2. Junior Administrative Assistants and junior administrative technicians of all kinds.
3. Recently recruited Junior Professional Assistants. Those who entered the service with a public administration option may profit from courses both more advanced and more specialized than those taken in college. Those who entered on various professional options and are now employed in such professions can profit very greatly from these courses if they expect, or wish to prepare, to enter into administrative work connected with their professional fields.
4. Employees who wish to broaden their understanding and improve their efficiency through a "tour of duty" by study, in lieu of an actual tour of duty for which they have found no opportunity.
5. Employees with college background who aspire to transfer to a career in administrative management.

II. ADMINISTRATIVE PROCEDURES

Approach

Emphasis on techniques, procedures, methods, but with an attempt to understand and use these means in terms of administrative ends or objectives.

Objectives

Ultimately, for responsible conduct of important "housekeeping" operations of specialized character, direction of small units,

performance of most difficult and responsible tasks in the procedural aspects of administration, and the settlement of questions of intermediate importance arising out of current or contemplated operations and not covered by existing regulations or decisions.

Immediately, for effective service in some administrative procedure at the clerical or semi-clerical level, as a means of entrance into the line of promotion leading to the responsibilities named above. (Students already at this level may arrange programs in conformity with their needs.)

Requirements

1. High-school diploma or equivalent.
2. Sixteen semester hours of credit selected from the following Graduate School courses:
 - a. All those offered in the Department of Public Administration (excluding all accounting courses except Federal Government Accounting). A minimum of eight credits must be selected from this group.
 - b. The following offered in the Department of Office Techniques and Operations:
 - (1) Administrative Procedure
 - (2) Purchasing Procedure
 - (3) Federal Auditing Procedure or Auditing Procedure
 - (4) Federal Accounting Procedure
 - (5) Federal Personnel Procedure
 - (6) Office Management
 - (7) Records Management Procedure, formerly called Communications and Records Management
 - (8) Government Letter Writing (2 credits only)
 - c. A course in elementary statistics (not exceeding 3 credits) may be included; it is not required.

The program leading to a Certified Statement of Accomplishment in Administrative Procedures should be of special interest to:

1. Persons already employed in administrative work of the procedural type, emphasizing techniques and skills.
2. Employees who aspire to enter administrative work but who, because of lack of college education, find their opportunities in that field greatly limited except at the procedural level. This program of courses is useful for persons with good native ability but limited educational background, because it pre-

pare them for a level of work most likely to be open to them. After they have succeeded in getting into administrative work, perhaps even at the clerical-administrative level, they can then combine their work-experience and study-experience to mutual advantage as progress is made toward greater responsibility. This approach is believed to be better for such persons than the common practice of attempting to circumvent the usual educational requirements by shortcut concentration on advanced and specialized courses, which are actually preparatory for responsible positions only insofar as they *supplement* broader educational background.

3. Employees who wish to prepare to become Junior Administrative Assistants or to head units concerned with administrative procedures.

III. ACCOUNTING

The Graduate School is interested in offering accounting courses primarily as a means of training for the *public* service. For many years the School has offered elementary and advanced accounting courses; and because of increasing demands for advanced work, it is now offering a coordinated program leading to a Certified Statement of Accomplishment in that field.

The curriculum necessarily includes courses in general accounting because the basic principles are essential for government accounting. The scope of accounting in the Federal service is wide. There are increasing demands for accountants having a knowledge of commercial as well as government accounting. These demands have come as a result of the formation of many government corporations and Federal regulatory agencies. Hence, the accounting program required for a Certified Statement of Accomplishment is broad enough to cover not only the regular appropriation accounting of the Federal Government, but also the accounting training needed for many other governmental activities. The program is comprehensive enough to meet both advanced training for the government service, and also the usual educational requirements for C.P.A. examinations.

Requirements

1. High-school diploma or equivalent.
2. Forty-two semester hours of credit distributed according to the following plan:

REQUIRED COURSES

| <i>Accounting</i> | <i>No. of Semesters</i> | <i>Credits (Sem. Hrs.)</i> |
|---|-----------------------------|--------------------------------|
| Principles of Accounting | 2 | 6 |
| Second Year Accounting | 2 | 6 |
| Cost Accounting | 1 | 3 |
| Auditing | 1 | 3 |
| Federal Government Accounting (Optional for persons not plan- ning to enter Federal account- ing work) | 1 | 3 |
| Federal Tax Accounting | 1 | 3 |
| Advanced Accounting Problems | 1 | 3 |
| <i>Related Subjects</i> | | |
| Principles of Economics | 2 | 6 |
| Business Law * | 2 | 6 |

ELECTIVE COURSES

| | | |
|--|---|---|
| Analysis and Interpretation of Fi- nancial Statements | 1 | 2 |
| Mathematics of Finance | 1 | 3 |
| Budgetary and Financial Admin- istration | 2 | 4 |
| Survey of Statistics | 1 | 3 |
| or Elementary Statistics | 2 | 4 |
| Federal Accounting Procedure | 1 | 2 |
| Federal Auditing Procedure | 1 | 2 |
| or Auditing Procedure | 2 | 4 |
| Public Finance and Taxation * | 1 | 3 |
| Money and Banking * | 1 | 3 |
| Corporation Finance * | 1 | 3 |

* Cooperative with American University.

—O—

Course Numbers and Symbols—Below 100, non-credit; 100–499, undergraduate; 500–699, graduate and advanced undergraduate; above 700, graduate. Bracketed numbers, not given this year. Figures in parentheses following the course title indicate number of semester credits.

—O—

GENERAL ADMINISTRATION

344. Introduction to Public Administration (3)

M 6:30-9:30. \$18

JOHN C. RUSSELL

This course is designed to introduce the student to the elements of public administration. Attention will be devoted to the evolution of administrative

organization; organizational types: staff, line, and auxiliary agencies and functions; controls of administration; the broadest aspects of personnel selection, classification, training, movement, and relations; budgeting and fiscal control; federal-state relations; administrative legislation and adjudication. The object of the course is to lay a broad foundation for more intensive courses in management.

626. Federal Administrative Management (2)

W 6:30-8:30. \$14. Registration limited to 15

JOHN D. MILLETT

An advanced seminar designed to aid persons who are carrying substantial administrative management responsibilities. Emphasis is placed upon the integration of all management functions and the development of a philosophy of management which is equally applicable to all phases. Lectures and discussions cover the following general topics, with particular attention to their interrelationships and interdependence; administrative planning and research; principles of organization; personnel selection, placement, training, and relations; administrative leadership, direction, supervision, and coordination; administrative reporting; budget formulation and execution; the auxiliary management services. Practical problems presented by class members for group discussion.

Prerequisite: Introductory course in public administration plus practical working experience in administrative management at level of CAF-9 or above.

617. Administrative Law and Procedure (2 each semester)

W 6-8. \$14

CHARLES B. NUTTING

Consideration given to the following subjects: disposition, delegation, and sub-delegation of governmental powers; limitations upon administrative discretion; regulatory procedures (including hearings) of Federal administrative agencies in general and of the Department of Agriculture in particular; recent and current proposals for revision of Federal administrative procedure; and judicial review of administrative action. To the extent possible, administrative procedures of some of the war agencies also are examined.

Prerequisites: First semester or completion of Law School course in administrative law.

623. Scientific Management (2)

Tu 6-8. \$14

ROBERT J. SCHUBACH

Survey of the principles and methods of scientific management as developed originally for factory control and later for general management. Scientific management techniques discussed both for their direct value in increasing production and as factors of morale. Research as guidance for administrative and managerial planning. The course will emphasize the dynamics of organized effort, and consider incentives appropriate to federal administration.

Prerequisite: Open to administrative personnel with some training or experience in public or private enterprise; or consent of instructor.

624. Organizational and Procedural Analysis (2)

F 6-8. \$14

JOSEPH POIS

Deals with techniques employed in analysis of organizational and procedural problems and in the formulation of recommendations for the solution of such problems. Considerable emphasis is placed upon the different sets of circumstances encountered in the course of such analytical work. Specific case studies are presented for discussion. Admission to the course is restricted to persons who have had several years' administrative experience.

Prerequisite: Consent of instructor, through Graduate School office.

[624B.] Advanced Organizational and Procedural Analysis (2)

JOSEPH POIS

[618.] Management and the Worker in the Public Service (2)

WARD STEWART

[621.] Federal-State Collaboration

[625.] Psychology of Management (2)

RENSIS LIKERT

Administrative Procedure

(See Office Techniques and Operations 408)

PERSONNEL ADMINISTRATION

661. Personnel Administration (2)

Tu 6:30-8:30. \$14

O. GLENN STAHL

Deals with personnel problems which arise when people are associated together in a work situation. It is designed to acquaint the student with the basic personnel policies and practices found necessary and useful in coping with these problems. Trends in public personnel administration and its relationship to over-all management are discussed. The course will be helpful to supervisors and administrators who desire a broad understanding of personnel administration and also to students who need foundation for the more specialized courses in the personnel field.

Prerequisite: 60 semester hours of college, grade CAF-4 in personnel work, or consent of instructor.

842. Personnel Administration (2)

M 6-8. \$14

LOUIS J. KROEGER

A graduate course dealing with the same problems and content described in the undergraduate course listed immediately above.

Prerequisite: Bachelor's degree or employment in personnel work at grade CAF-7 or above.

659. Position Classification (2)

M 6-8. \$14

ROBERT L. HILL

An introductory course designed to give the student an understanding of the fundamental concepts of position classification and its uses; the relation of classification to compensation and other phases of personnel administration; the historical background of position classification in the Federal service; an analysis of the Classification Act of 1923 and its amendments and its relation to other personnel processes; position analysis and factors to be considered in the allocation of positions.

Prerequisite: 60 semester hours of college work or consent of the instructor.

660. Position Classification (2) Fall

(For graduate students)

O. GLENN STAHL

627. Advanced Position Classification (2)

M 6-8. \$14

JAMES L. BUCKLEY

A study of the practical administration of the Federal classification plan. Emphasis will be placed on the actual methods, policies, and practices that in-

fluence allocation of positions. Specific positions and their allocation factors will be discussed.

Prerequisite: Course 659 or 660 or equivalent experience.

630. Selection and Placement (3)

Tu 6:30-9:30. \$21

ARTHUR B. McLEAN

Recruiting, evaluation, probation, placement, and promotion of employees, with special reference to the Federal civil service; lectures and discussions.

631. Employee Relations and Counseling (2)

Tu 7-9. \$14

GENEVIEVE E. POOLE

Deals with the organization and operation of a program of employee relations and counseling in the Federal service. Emphasis on methods and techniques of both preventive and remedial employee relations: counseling and dealing with grievances. Organization for and methods of dealing with (1) individual problems of adjustment both to work environment and to off-the-job environment, and (2) group problems and relationships, employee organization and representation, and appeals procedure.

639. Employee Training (2) Fall

C. O. HENDERSON

663. Legal Aspects of Investigations—Criminal Evidence and Procedure (2) Fall

RALPH KOEBEL

[633.] Advanced Safety Administration (1)

[629.] Tests and Measurements in Personnel Administration (2)

Techniques of Interviewing and Questionnaire Construction (See Social Sciences 736)

The Conditions of Personality Growth (See Social Sciences 342)

Federal Personnel Procedure (See Office Techniques and Operations 414)

PUBLIC RELATIONS

840. Principles and Practice of Public Relations (2) Fall DUNCAN WALL

Creative Writing (See Languages and Literature 224)

Editing (See Languages and Literature 225)

Writing for Official Purposes*(See Languages and Literature 226)***Workshop in Effective Government Writing***(See Office Techniques and Operations 421)***BUDGETARY ADMINISTRATION****635. Budgetary and Financial Administration: Budget Formulation (2) Fall**

W. A. JUMP and SPECIALISTS

636. Budgetary and Financial Administration: Budget Execution (2)

Th 6-8. \$14

W. A. JUMP and SPECIALISTS

This is the second part of an advanced two-semester course covering the broad phases of budgetary and financial administration in the Federal Government. Several officials from bureaus and department budget offices, and other budgetary and financial organizations, lecture and lead discussions.

This semester deals with the execution of the budget after being enacted by Congress and the relationships of administrative planning and control, accounting, auditing, and financial reporting to budget execution.

Prerequisites: Experience in budgetary or financial administration, courses in government or public administration, or consent of instructor.

PURCHASING**637. Governmental Purchasing (2 each semester)**

F 6-8. \$14. New students admitted

S. A. SNYDER and J. K. KNUDSEN

This course is primarily designed for employees who are or desire to be engaged in purchasing activities for the Federal Government and persons who sell goods and services to the Government. It deals with the procedure, economics, and law (from a layman's viewpoint) relating to such purchasing. Among the topics considered are: the organization and management of purchasing offices and Government warehouses; the nature of public contracts and how they differ from private contracts; specification writing; the analysis of market conditions with reference to Government purchasing; the effect of numerous laws such as the Walsh-Healy Act, the Bacon Davis Act, and the Eight Hour Law; the place and functions of the General Accounting Office and the Procurement Division in the purchasing scheme; and practices under wartime conditions, including a review of the war powers relating to purchasing, renegotiation, termination, and cost-plus-fixed fee contracts. Leading specialists will be invited to discuss selected technical phases.

The course is so arranged that attendance at either semester will add to the student's knowledge and credit will be given on a semester basis. No subject matter, however, will be repeated.

638. Renegotiation and Reconversion (2)

W 6-8. \$14

JAMES R. WILSON

Covers in considerable detail the rules, practices and problems pertaining to renegotiation and reconversion, including termination of contracts and surplus property. Statutes studied are the Renegotiation Acts of 1942 and 1943, the Contract Settlement Act of 1944, the Surplus Property Act of 1944, and the War Mobilization and Reconversion Act of 1944. Among the administrative regula-

tions and practices to be examined will be those of the War Contracts Price Adjustment Board, the Office of Contract Settlement, the Surplus Property Board, and the Office of War Mobilization and Reconversion, as well as the pertinent ones of the major procurement agencies. Advantage will also be taken of collateral and background material in reports, current periodical publications, etc.

(This is a modification of the former course, Government War Contracts.)

Federal Purchasing Procedure

(See Office Techniques and Operations 415)

ACCOUNTING

See page 54 for a suggested program of study and for the requirements for a Certified Statement of Accomplishment in Accounting.

352. Principles of Accounting—First half (3)

Tu-Th 6-7. \$18

WILLIAM H. ROWE

Laboratory Tu 7-9 beginning one week later with Helen L. Block as laboratory instructor

Elementary principles of accounting; discussion and problems. At the end of the semester students will be prepared to do the accounting necessary for a small business organization; i.e., keep a complete set of books, draw up statements at the end of the fiscal period, adjust the accounts for accruals, deferred items, depreciation, etc., and close the books.

352. Principles of Accounting—Second half (3)

M-W 6-7. \$18

WILLIAM K. BROWNOLD

Laboratory M 7-9 beginning one week later with Pauline W. Berrum as laboratory instructor

Continuation of first half covering more advanced principles of accounting; accounting for partnerships, corporations and manufacturing; depreciation policies and analysis of financial statements.

353. Second Year Accounting (3 each semester)

M 6-9. \$18

ALLAN J. FISHER

First semester: Advanced principles of manufacturing accounting, corporation accounting, and valuation as applied to current assets, fixed assets, intangibles, and liabilities, reserves and funds, installment sales.

Second semester: Advanced principles of partnership accounting, including formation, operation, and dissolution; joint ventures; consignments; agencies and branches; consolidated balance sheets and income statements; application of funds; accounting for insolvent and bankrupt concerns; estates and trusts.

Prerequisite: First semester or equivalent.

354. Federal Government Accounting (3)

W 6-9. \$18

CHARLES N. MASON

A review of the development of the accounting system for Federal funds and a detailed study of appropriation, fund, receipts, and governmental corporation accounting. Special emphasis is given to the accounting problems of administrative agencies. The Treasury Department and General Accounting Office relationships to the accounting system are covered. Specialists in their respective fields assist in the course.

Prerequisite: One year of basic accounting or Federal Accounting Procedure, or one year of experience with the Federal system of accounting.

643. Auditing (3)

Tu 6-9. \$21

AARON H. CHUTE

The purposes and types of audits are studied. Consideration is given to such problems as the planning and performing of audits, principles and auditing of different types of audits, audit working papers and reports, and responsibility of the auditor.

Prerequisite: Second Year Accounting.

642. Cost Accounting (3) Fall

JOHN J. BACHMANN

645. Federal Tax Accounting (3) Fall**[647.] Analysis and Interpretation of Financial Statements
(2)****[646.] Advanced Accounting Problems****Federal Accounting Procedure**

(See Office Techniques and Operations 412)

Department of Social Sciences

DEPARTMENTAL COMMITTEE

CHARLES F. SARLE, Ph.D., Executive Assistant for Scientific Services, Weather Bureau (Chairman)
ERIC ENGLUND, Ph.D., Chief, Regional Investigations Branch, Office of Foreign Agricultural Relations
ASHLEY SELLERS, S.J.D., Assistant Administrator, War Food Administration
CONRAD TAEUBER, Ph.D., Statistical Analyst, Office of the Chief, Bureau of Agricultural Economics
FREDERICK V. WAUGH, Ph.D., Chief, Program Analysis and Appraisal Branch, Office of Distribution

PURPOSE AND SCOPE

Social science deals with *people* and the problems of human relationships, as contrasted with natural or physical science which deals with *things* and the problems arising out of physical relationships.

The problems of social organization and operation have become both absolutely and relatively more important with the increase in complexity of our industrial civilization. More and more, people are concerned with the organization and regulation of production, the distribution of goods and income, and with price policies. The individual as a consumer and investor, the businessman and the farmer as producers, find increasing need for a knowledge of economics and other social sciences. Large corporations are employing growing numbers of economists to help in the formulation of policy. Psychologists and social workers are finding a demand for their services in personnel work. And, the tremendous growth in Federal, state and local government organization calls for many more people adequately trained in social science.

Social science is divided into a number of closely allied fields including economics, sociology, political science, history, law, and psychology. A broad grasp of any one of these subjects implies at least some familiarity with the others, because of the many interrelationships among these social studies. Yet the continued development of each social science has given rise to larger and still larger bodies of knowledge relating to it, until only through a considerable degree of specialization can the student hope to master any one part. Thus the great need is for people who have concentrated sufficiently on one phase of a social science, such as money and banking in economics, to be thoroughly familiar with the details of fact and principles involved, yet who also have a broad underlying training in the allied social science fields. The courses offered by the Graduate School are designed to aid in acquiring such a general background in the social sciences, as well as the spe-

cialized training in particular fields which is necessary for successful work in many Government departments and in private business.

Not all of those engaged in occupations connected with the social sciences, however, can hope to attain such a complete general as well as specialized background, at least for some time to come. They will be interested, rather, in courses designed to fit them better for doing some specific job which is not connected with policy formation or general administration. An employee in the personnel office of a Department of Agriculture Branch responsible for market news and inspection services may wish to take a course in Advanced Marketing in order to learn something about the subject matter dealt with by the personnel of the Branch, or a course in psychology as an aid in dealing with the personal problems which are daily presented to employee counselors. The secretary to an economic research director may want a course in the principles of economics in order to become familiar with the terminology and general economic concepts to which her stenographic and filing duties relate. An almost unending array of job needs of this kind offers opportunities to the alert and ambitious employee to increase his capacity and usefulness to his employer. The many promotions within the Government service which can be traced directly to such training testify to the fact that study in the social sciences is profitable.

About half the courses offered in the social sciences deal with economics, including not only courses in theory and principles, but also applied economics in several fields such as agriculture, labor, transportation, banking, taxation, and economic geography. These courses deal with the business side of life; that is, with the science and art of making a living. Special emphasis is given to the analysis of government policies which affect prices, production, and methods of doing business.

Fewer courses are offered in the other specialized fields within the social sciences. The Graduate School believes that all students doing serious work in the other social sciences should have a good grounding in economics. Such students will find several useful and important courses in most of the other fields, but in many cases if they want to specialize in such subjects as sociology, political science, law, history, or psychology they will need to supplement their work in the Graduate School with courses taken in other institutions.

GROWING NEED FOR TRAINED WORKERS

In recent years, governments have been taking a more active part in the regulation of economic and social life. During the war such

controls are necessarily strengthened and increased until they affect almost all economic and social activity. After the war many of these controls doubtless will be relaxed or dropped, but it is quite clear that the underlying trend is not likely to be reversed although there may be temporary counter trends. In this country the State and Federal Governments doubtless will be called upon to carry out a number of broad post-war programs dealing with such matters as processing, production, distribution, taxation, employment, monetary and fiscal policy, the regulation of business practices, and international trade.

It is extremely important that government policies, both during the war and after the war, be based on competent studies. To forecast accurately what will happen and to point out clearly the good and bad effects which may result from any proposed course of action is the major service which social scientists may render the people.

Washington is an excellent place to study problems of this kind. The principal Federal programs in the economic and social fields are administered in Washington and new proposals always are being considered both by the Congress and by the agencies responsible for the programs. Moreover, Washington is growing in importance as a center for the discussion and actual administration of international programs.

SUGGESTIONS FOR PROGRAM OF STUDY

The School offers a rather wide range of courses in the social sciences. This is necessary because of the breadth of the field and the need for a considerable degree of specialization in several of the sub-fields.

All students in the social sciences should have a few general foundation courses. If the student has not already had such courses, he should take them as soon as he begins his work in the social science department.

It is also advisable for most students in this field to know something about statistics. This is not an absolute requirement for all courses in the social sciences, but students will find that a grasp of elementary statistical methods is extremely useful in most studies in this field and is indispensable for many of them.

Most students in the social sciences will want to specialize in some specific field. The courses are arranged to provide such specialization, but students should remember that these sub-fields are not entirely separate and distinct from one another. They will have to avoid two evils—that of overspecializing, and that of getting a smattering of a wide variety of topics within the broad field

of the social sciences. For that reason, students who take a large number of courses in one particular sub-field should also enroll in some of the advanced courses in theory and principles of their particular disciplines and at least a few courses in other specialized fields which are fairly closely related to their own.

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Course Numbers and Symbols—Below 100, non-credit; 100–499, undergraduate; 500–699, graduate and advanced undergraduate; above 700, graduate. Bracketed numbers, not given this year. Asterisk (*) before numbers, may be applied toward resident credit for advanced degree at American University. Figures in parentheses following the course title indicate number of semester credits.

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ECONOMICS

328. Principles of Economics (3 each semester)

Tu-Th 6-7:30. \$18. New students admitted with consent of instructor

FREDERICK L. THOMSEN

An examination of the nature, validity, and significance of the “fundamental principles of economics.” The course is designed to give the student the understanding of basic concepts necessary for advanced study in the field of economics and for the better understanding of materials dealt with in applied courses. The relation between economic theory and scientific methods. The organization of the economic system: production, consumption, exchange, and the distribution of income and wealth. The relation between economic institutions and so-called economic laws. Although the significance of basic principles will be interpreted in relation to current events and problems, the course is primarily designed to furnish an understanding of the scientific aspects of economics which have continuing application under changing world conditions.

610. Consumer Cooperation (2) Fall

VALERY J. TERESHTENKO

692. Econometrics: Mathematical and Statistical Analysis of Economic Problems (2 each semester)

M 6:30-8:30. \$14. New students admitted with consent of instructor

R. O. BEEN

Application of mathematical and statistical procedures to analysis of problems in economic theory and applied economics occupies a prominent place in contemporary economic literature. Many important modern contributions to the economic field utilize these procedures and require special training on the part of economists who wish to follow them. It is the purpose of this course to provide the basic part of this discipline, relating mathematics and statistics to economics.

The first third of the first semester will be devoted to review and development of mathematical and statistical methods with special topics discussed later as required. H. T. Davis' *The Theory of Econometrics* will be used as the principal text, supplemented by readings of journal articles and special refer-

ences. Graphic methods will be stressed. The last part of the second semester will be devoted to discussion of important modern writings including articles in *Econometrica* and *Economica*.

Prerequisites: For graduate credit, economic theory, elements of statistics and mathematics to calculus. For others, at least college algebra and principles of economics.

807. International Financial and Trade Policies (2)

F 6-8. \$14

OSCAR ZAGLITS

The course analyzes problems of international commercial and financial policies, particularly possible patterns of such policies under economic conditions that may prevail in the post-war period. The problems discussed include: free trade versus industrial and agricultural protection; dumping and foreign trade subsidies; trade restrictions by tariff versus trade restrictions by quotas, exchange control, and other administrative devices; efforts of the United States trade policy to secure equality of treatment in the face of regional, empire, and other preferences; bilateral versus multilateral trade; stable versus variable exchange rates; international reconstruction policies after this war (critical analysis and discussion of proposals for international monetary stabilization, world clearing systems, international lending, international commodity agreements, etc.).

The course will be valuable to those who are or may be concerned with international policies (tariffs, foreign trade, foreign agriculture, etc.) or with monetary and financial problems; it will also benefit those who expect to go abroad in the service of the United States Government or other institutions.

***579. Research Methodology in Economics (2)**

M-W 6-7:30. \$14

MICHAEL T. WERMEL

This course is designed primarily for the economist and economic statistician who is engaged in economic and statistical research. The aim is to acquaint the students with the application of the basic principles of scientific method to concrete research problems and also with the art of preparing written reports embodying the results of their investigations.

[604.] Seminar: The Economies of the Nations of Latin America (3)

CHARLES F. SARLE

[612.] Principles of Insurance (3)

VICTOR H. VALGREN

[*809.] Price Analysis (3)

FREDERICK L. THOMSEN

[812.] War and Post-War Financial Problems (2)

FRED L. GARLOCK

[823.] Welfare Aspects of Economic Policy (2)

F. V. WAUGH and R. O. BEEN

Principles of Transportation

(See Transportation and Traffic 337)

Money and Banking¹ (3)

Tu 6:10-8:20. \$30

FRITZ K. MANN

(¹ American University course. See A.U. catalog.)

Advanced Fiscal Theory¹

F 6:10-8:20. \$30

FRITZ K. MANN

Full Employment Policy¹

Tu 6:10-8:20. \$30

MILTON GILBERT

AGRICULTURAL ECONOMICS

***580. Social and Economic History of American Agriculture
(3) Fall**

EVERETT E. EDWARDS

[*584.] Production Economics (3)

S. E. JOHNSON and W. D. GOODSSELL

***585. Farm Management (3)**

M-F 6-7:30. \$21

S. E. JOHNSON and W. D. GOODSSELL

This course considers the role of farming in the national economy, the types and sizes of farms operated in the different farming regions of the United States, and the factors to be considered in evaluation and purchase of farm land and other farm assets. It stresses the importance of effective organization and management of farms, and outlines procedures for obtaining the most efficient and profitable combination of resources and of farm enterprises. Consideration also is given to the efficient operation of enterprises on the individual farm, and to the basis for formulation of farming programs for agricultural areas and for the nation. Appraisals are made of the effects of current and proposed agricultural programs on the efficient and economical operation of the individual farm.

***586. Land Economics (3) Fall**

V. W. JOHNSON and J. F. TIMMONS

664. Economics of Rural Welfare (2) Fall

RAINER W. SCHICKELE

667. Foreign Marketing (3)

W 6:30-9:30. \$21

ROLAND L. KRAMER

An intensive study of the principal methods and technical factors involved in the process of marketing goods abroad, with a review of prospective markets in Europe, Latin America, and Asia. Special attention will be given to the organization of foreign commerce including discussion of sales agencies, advertising, credit facilities, exchange problems, and commercial law.

693. Advanced Marketing (2 each semester)

W 6-8. \$14. New students admitted with consent of instructor S. R. NEWELL

Fall semester. The first half of the course will be devoted to a survey of marketing particularly as it relates to the development of the agricultural marketing services. This will be followed by a more detailed discussion of some of the specific activities, particularly crop reporting, market reporting, standardization and grading activities. Some time will be devoted to the practices and policies relating to administration.

Spring semester. This part of the course will be closely related to the first half but will deal more specifically with some of the important regulatory laws. Some of these are: Pure Food, Drug, and Cosmetic Act, Meat Inspection Act, the Grain Standards Acts, several Cotton Acts, and Commodity Exchange Act. Al-

(¹ American University course. See A.U. catalog.)

though some attention will be given to legal aspects, the approach will be from the marketing standpoint and will not be a legal discussion. The marketing implication of some of the more important Acts, such as those mentioned above, will be discussed by specialists in the respective fields.

Prerequisite: Course in marketing or satisfactory experience in this field.

835. Agricultural Cooperation (2)

Tu 6-8. \$14

WARD W. FETROW and HAROLD HEDGES

This course includes the history, philosophy, and economic concepts of the cooperative movement; and study and evaluation of the major developments in this country of various types of marketing, purchasing, and service associations. These will be approached through actual case situations. Emphasis will be placed on the possible role of cooperatives in the post-war period.

581. Comparative World Agriculture (3) Fall

CLAYTON E. WHIPPLE

587. Seminar in Land Economics Research (2)

Tu 6-8. \$14

V. W. JOHNSON

Development of land economics research in the United States. Analysis of selected studies in terms of objectives, approach, methods, conclusions.

[332.] The Department of Agriculture—Its Origin, Structure, and Functions (3)

T. SWANN HARDING

[589.] Cotton Marketing

J. W. WRIGHT

[590.] Warehousing

[688.] Current Land Policies (2)

V. W. JOHNSON and J. F. TIMMONS

[808.] Principles of Agricultural Marketing

R. O. BEEN and SPECIALISTS

Statistics of Crop Estimating

(See Mathematics and Statistics [737])

Cotton Classing

(See Engineering and Mechanical Arts [191])

LABOR ECONOMICS

***595. Organized Labor and the Law (3) Fall**

DAVID ZISKIND

593. Labor and Social Legislation (3)

M 6-8:30. (18 weeks) \$21

DAVID ZISKIND

This course deals with the problems of the individual worker and the progress of social legislation designed to improve his labor standards. It reviews the legislation on child and woman labor, safety and health, accident compensation,

wage payment and collection, minimum wages, maximum hours, unemployment insurance, and old-age pensions. Attention will be given the administrative techniques of the Social Security Board, the Railroad Retirement Board, and the Wage-Hour Division of the Department of Labor, as well as the various State labor departments.

[594.] Settlement of Labor Disputes (3)

DAVID ZISKIND

[596.] Labor and the War Program (3)

DAVID ZISKIND

Labor and the Public Interest¹ (3)

W 6:10-8:20. \$30

GUSTAV PECK

ECONOMIC THEORY

597. History of Economic Thought (3 each semester)

W 7-10. \$21. New students admitted

MAX J. WASSERMAN

An examination of the principal economic theories from Greek antiquity to the present time in the light of the institutions, customs, and practices that conditioned them.

***810. Economics of Imperfect Competition (3 each semester)**

W 7-9:30. (18 weeks) \$21. New students admitted with consent of instructor

MICHAEL T. WERMEL

This course will commence with a critical reexamination of basic premises underlying the traditional theory of price determination, as an introduction to an intensive study of newer theoretical techniques, developed recently, for the analysis of prices under conditions that fit neither assumptions of "perfect competition" nor of "pure monopoly" and that have been described as conditions of "monopolistic" or "imperfect" competition. In the second semester, the usefulness and applicability of this theoretical apparatus will be tested by a study of actual institutional practices, of price determination in specific markets in industries such as rubber tires, agricultural implements, drugs, meat packing, fertilizer, canning, etc., where admittedly neither "perfect competition" nor "pure monopoly" prevails.

***811. Post-War Economic Problems (2) Fall**

MICHAEL T. WERMEL

Economic Theory¹ (3 each semester)

Th 8:20-10:30. \$30

HOWARD S. PIQUET

Contemporary Economic Thought¹ (3 each semester)

Th 6:10-8:20. \$30

HOWARD S. PIQUET

ECONOMIC GEOGRAPHY

613. Economic Geography (3) Fall

CLAYTON E. WHIPPLE

(¹ American University course. See A.U. catalog.)

614. Economic Geography of Europe (2)

M-W 6-7:30. \$14

CLAYTON E. WHIPPLE

A seminar course dealing with the human and economic geography of Europe. A survey of man's occupation and utilization of the resources of the continent will be made including agriculture, forestry, fishing, manufacturing, and other important occupations of the continent. An important element will be a survey of probable social-economic post-war adjustments.

POLITICAL SCIENCE AND HISTORY**603. The British Empire in Peace and War (2)**

Tu 6-8. \$14

ALBERT VITON

The course will review the development of political and economic forces within the British Empire and Commonwealth of Nations, analyzing effects on the international status of the various parts of the Empire, and on their relations with Britain. Special emphasis will be placed on economic, social and political policies of Britain since the outbreak of the war, organization of the Empire for prosecution of total war and effect of recent economic and political developments on the future of the British Empire.

(See Regional Studies for related courses.)

607. Problems of International Organization (2)

W 6-8. \$14

TO BE ANNOUNCED

After a brief survey of the rise of the modern national state system and the conflict in Western thought between nationalism and internationalism, the League of Nations and the other international institutions established at the end of the last war, attention will be focused on the chief political, social, and economic problems which will confront the victorious democracies at the end of the war. Special emphasis will be placed on the problems of the Pacific and Asia. The problems of immediate relief and reconstruction of conquered and occupied areas, and methods now being devised in Britain, the United States, and by exiled governments for dealing with those problems. Contemporary theories of federal union and reconstruction of the League of Nations. The problem of control of national military forces; theories of international military organizations. The nature of the colonial problem, its significance and the possible solutions now being devised. Problems of surplus population, international trade, raw materials and industrialization of "backward" areas. The problem of international security, arbitration of disputes and world economic social planning. Minority and imperialist problems of the Near East. The place of Soviet Russia in the new order in the Pacific, its policies and influence on the peace settlement, and future relations with America. The new balance of power in the Pacific and the role of the United States.

608. World Politics (2)

Tu 6-8. \$14

WESLEY M. GEWEHR

A survey of world affairs and international relations. Such topics will be considered as the origins of the World War of 1914-18, the Versailles Conference and the treaties that brought no peace; revolution in Germany and Russia; the conditions that gave rise to Mussolini and Hitler; the nature of Nazism, Fascism and Communism; the breakdown of the peace machinery; the war; basic issues in the Far Eastern situation; problems and prospects of Pan-Americanism.

[670.] Latin American History (2 each semester)

691. Pressure Groups in Government (2) Fall

JASPER B. SHANNON

[339.] Recent American History

WESLEY M. GEWEHR

[601.] Problems of Nationalism in the East and the West (2)

R. V. GOGATE

[813.] Contemporary Political Thought (2)**[332.] The Department of Agriculture—Its Origin, Structure and Functions (2)**

T. SWANN HARDING

Social and Economic History of American Agriculture
(See Agricultural Economics 580)**Principles of International Law¹**

Tu 8:20-10:30. \$30

PITMAN POTTER

See all Public Administration courses.

PSYCHOLOGY**342. The Conditions of Personality Growth (2)**

W 7-9. \$12

DWIGHT H. CHAPMAN

This course treats the principal factors influencing personality development: physiological bases, infantile and childhood experiences, and cultural determinants. It considers both experimental and clinical contributions to the theory of personality and the application of those to practical problems of interpreting and dealing with people.

736. Techniques of Interviewing and Questionnaire Construction (2) Fall

RENSIS LIKERT

822. Social Psychology (2)

W 6-8. \$14

CARL C. TAYLOR and EDGAR A. SCHULER

A general study of the basic features of social behavior, the psychological foundations of social behavior, and personality and social behavior; consideration of attitudes, public opinion and propaganda, mobs, crowds, and audiences. Special attention will be given to such practical problems as personal ascendancy, leadership, and personnel management.

[830.] Rural Social Psychology

CARL C. TAYLOR

PUBLIC LAW**Administrative Law and Procedure**

(See Public Administration 617)

Organized Labor and the Law

(See Labor Economics 595)

Legal Aspects of Investigation—Criminal Evidence and Procedure

(See Public Administration 663)

Business Law¹ (3)

Th 6:10-8:20. \$30

WALTER YOUNG

REGIONAL STUDIES

These regional orientation courses cut across traditional academic lines. They are designed to give students: (1) a basic knowledge of the region involved, the pattern of anthropological, economic, geographical, historical, political, and social factors which have gone into the development of the region and play important roles in its life today; (2) the "feel" of the region—the customs, religions, folkways, prejudices, and other aspects of life in the countries included. These factors are discussed in practical terms as they are reflected in today's problems in the region. Also discussed are the prospective situations of the countries in the region during the post-war period.

The regions listed are not mutually exclusive in all cases, and in some instances emphasis is on particular countries within the region or on certain aspects of life within those countries. In such cases this fact is noted in the course description.

These courses will be useful to those who plan to engage in relief and reconstruction work during or after the war, as well as to others whose work in this country touches at some point on the regions covered. Under each course, reference is made to related language courses. It is suggested that students refer also to other courses of a related nature (such as Post-War Economic Problems, International Organization, War and Post-War Food Policy, World Politics, Comparative World Agriculture, Economic Geography of Europe, etc.), particularly in this department, and to courses offering training in specialized professional fields.

598. The Orient (2) Fall

R. V. GOGATE

600. Contemporary Russia (2)

Th 7-9. \$14

VALERY J. TERESHTENKO

Beginning with a brief summary of political, social, and cultural life in Imperial Russia, this course will place major emphasis upon Russia since the

(¹ American University course. See A.U. catalog.)

Revolution. The survey will include description of Russia's natural resources, and an analysis of Soviet planned economy in relation to agriculture, industry, transportation, and distribution. Some treatment will be accorded the cultural and geographic regions of Russia with a final discussion of the role of the U.S.S.R. in World War II.

602. Contemporary China (2)

W 6-8. \$14

I-MIEN TSIANG

This course is designed to give an understanding of modern China. Among the topics to be studied are the social, economic, and political developments since 1911; the political parties and leaders; and the present war-time conditions.

(*See also Chinese.*)

[609.] The Far East (2)

WESLEY M. GEWEHR

[605.] The Philippines (2 each semester)

LEOPOLDO T. RUIZ

606. Philippine Reconstruction (2)

F 6-8. \$14

LEOPOLDO T. RUIZ

A study of social problems likely to prevail in the Philippines at the close of the present war. A survey will be undertaken of the socio-economic problems during the American regime such as those arising from agricultural land utilization, farm tenancy, trade and commerce, and the Philippine independence movement. The socio-economic planning of the Philippine Commonwealth and its bearing on the post-war period including proposed solutions such as the cooperative system and government-owned corporations will be discussed. The American democratic policy as a factor in group awareness to the adverse social and economic conditions will be stressed throughout the course.

599. The Balkans and Near East (3)

Tu 6-9. \$21

CLAYTON E. WHIPPLE and AFIF TANNOUS

A political and socio-economic survey. Special emphasis on rural and agricultural problems, agricultural rehabilitation, and indicated solutions.

(*See Arabic, French, Czech, Russian.*)

669. Contemporary Japan

F 6-8. \$14

JOSEPH G. YOSHIOKA

After a brief summary of the evolution of the Japanese people, this course analyzes the principal political, economic, social, religious, and educational institutions of present-day Japan. The chief purpose is an objective appraisal of the most important aspects of current Japanese living.

(*See also Japanese.*)

[814.] Latin America (2 each semester)

CARL C. TAYLOR, C. P. LOOMIS, and T. L. SMITH

La America Latina y los Estados Unidos

(*See Sociology 611*)

The British Empire in Peace and War

(*See Political Science and History 603*)

SOCIOLOGY

611. La America Latina y los Estados Unidos (2 each semester)

M 8-10. \$14

PHILIP L. GREEN

Lectures and discussions in Spanish.

This course provides an opportunity to achieve greater facility in Spanish, while acquiring useful and interesting information on the life of the Latin-American countries and their relations with the United States.

The first semester analyzes racial, geographic, economic, and political forces that have shaped Latin-American developments; and surveys important contributions of Latin-American literature, art, music, social legislation and other spheres of human activity. The second semester embraces fundamental trends and influences for and against inter-American friendship, from earliest times to the present day. It describes official and non-governmental inter-American relations, presents problems and indicates opportunities facing the Americas today. Registration is limited to students who have had the requisite instruction and practice in Spanish. Those who are in doubt as to their adequacy in this regard are advised to confer with the instructor before registering.

***815. The Cultural Regions of the United States (3) Fall**

CARL C. TAYLOR

***817. Rural Community Organization (3) Fall**

DOUGLAS ENSMINGER

[816.] The Evolution of American Rural Life

CARL C. TAYLOR

[818.] Rural Population Trends

CONRAD TAEUBER

[819.] Contemporary Social Theory**Sampling in Social and Economic Surveys***(See Mathematics and Statistics 732)***Social Security Programs¹ (3)**

W 6:10-8:20. \$30

OSCAR WEIGERT

TRANSPORTATION AND TRAFFIC

337. Principles of Transportation (3)

Tu 6-9. \$18

HAMPTON K. SNELL

Characteristics and economic principles of railway, highway, waterway, and air transportation. Transportation geography and principal commodity movements of the United States. Freight and passenger rate principles. Varieties of competition, cooperation, consolidation, coordination. Transportation labor relations and financial problems. Interstate Commerce Act; principles of interstate and intra-state regulation of railway, highway, waterway, and air transportation. Sources and interpretation of transportation data and information, particularly for Government employees.

655. Freight Tariff Construction and Interpretation (3) Fall⁽¹ American University course. See A.U. catalog.)

615. Freight Rates (3)

M 6-9. \$21

V. I. GRUBER

The principles and practices of carriers in domestic interstate commerce in freight rate-making for those engaged in transportation rates and regulated traffic work with Government agencies. It will include freight traffic territories of the United States, classification, operation, and traffic association; economic principles of freight rate-making and railroad rate-making procedure; freight tariff publication; freight rate structures of the chief traffic territories; transcontinental freight rate structure, and import and export rates; domestic water transportation freight rates; railway express rates and freight forwarder rates.

806. Wartime Transportation Problems (2)

SIDNEY L. MILLER

826. Traffic Management (3)

Th 6-9. \$21

TO BE ANNOUNCED

A course designed to acquaint transportation students with the principles and practices of traffic management from both governmental and commercial points of view. It includes freight rate administration and procedure; preparation and filing of freight clauses; routing of traffic; tracing and expediting; and procedure before carrier organizations and government regulatory commissions. Current developments (ODT procedure, etc.) in the field of traffic are stressed.

828. Problems of Commercial Air Transportation (3) Fall**[820.] Seminar on International Aviation****[821.] International Air Transportation**

CHARLES D. BROWN

Present and Future Development in Transportation¹ (3)

F 6:10-8:20. \$30

LUDWIG M. HOMBERGER

(¹ American University course. See A.U. catalog.)

Faculty

Note: This list includes only those faculty members scheduled to teach during the year 1944-45.

- MANUEL I. ABELLA, Ph.D., University of Santo Tomas, Manila. Captain, Philippine Army Reserve. Taught in University of Santo Tomas and Howard University. (Languages and Literature)
- J. K. ABLEITER, M.S., Wisconsin. Principal Soil Scientist, Bureau of Plant Industry, Soils, and Agricultural Engineering, USDA.* Taught in North Dakota State Agricultural College. (Physical Sciences)
- JOHN J. BACHMANN, C.P.A., M.S.C., Southeastern. Chief Accountant, Office of Distribution, USDA. Taught in St. Thomas College and American Institute of Commerce. (Public Administration)
- LOUISE C. BARRY, J.D., California. Senior Stenographer, Office of Solicitor, USDA. (Office Techniques)
- CONSUELO BATISTA, Secretary, Cuban Embassy. Taught in Escuela Normal para Maestras, Havana. (Languages and Literature)
- MAGNA E. BAUER, Auguste Victoria Lyzeum, Berlin. Senior Censorship Clerk, Office of Censorship. (Languages and Literature)
- GEORGE E. BEAUCHAMP, Ph.D., Northwestern. Executive Secretary, Inter-Agency Publications, Office of War Information. Taught in Manchester College, Northwestern and Nottingham Universities. (Languages and Literature)
- R. O. BEEN, M.A., George Washington. Senior Agricultural Economist, Bureau of Agricultural Economics, USDA. (Social Sciences)
- F. C. BISHOPP, Ph.D., Ohio State. Assistant Chief, Bureau of Entomology and Plant Quarantine, USDA. Taught in Colorado Agricultural College and University of Maryland. (Biological Sciences)
- SIDNEY F. BLAKE, Ph.D., Harvard. Senior Botanist, Bureau of Plant Industry, Soils, and Agricultural Engineering, USDA. Formerly Professor of Botany, Stanford University. (Biological Sciences)
- H. W. BLALOCK, Ph.D., Illinois. Principal Rate Investigator, Federal Power Commission. Taught in University of Arkansas. (Engineering and Mechanical Arts)
- ANNA C. BOLTON, M.A., New York University. Training Specialist, Training Section, Division of Personnel Management, War Production Board. (Office Techniques)
- C. VERNE BOWEN, M.S., Washington and Jefferson. Associate Chemist, Bureau of Entomology and Plant Quarantine, USDA. Taught in Washington and Jefferson College. (Physical Sciences)
- DANIEL M. BRAUM, B.S.A., Kansas State. Assistant Chief, Division of Training, Office of Personnel, USDA. (Office Techniques)
- IRA T. BRAUNSTEIN, LL.D., Royal University, Lemberg, Austria; graduate study, New York University. Claims Examiner, Commodity Credit Corporation, USDA. (Languages and Literature)
- ESTHER R. BROWN, M.A., Universidad Nacional de Mexico; graduate study, University of Texas. Associate Specialist in Inter-American Educational Relations, U. S. Office of Education. Taught in Wesley College. (Languages and Literature)

* United States Department of Agriculture.

- MARCUS GORDON BROWN, Docteur ès Lettres, Université de Dijon. Taught at University of Florida and Georgia School of Technology. Specialist, Inter-American Educational Relations, U. S. Office of Education. (Languages and Literature)
- WILLIAM K. BROWNOLD, B.S.C., Southeastern. Chief, Accounting Division, Petroleum Administration for War. (Public Administration)
- JAMES L. BUCKLEY, LL.B., Georgetown. Assistant Director of Personnel, USDA. (Public Administration)
- WALTER G. CADMUS, JR., B.S., Kansas. Agricultural Engineer, Bureau of Plant Industry, Soils, and Agricultural Engineering, USDA. (Engineering and Mechanical Arts)
- W. E. CAINE, M.B.A., Northwestern. Assistant Chief, Division of Rates and Research, Federal Power Commission. (Engineering and Mechanical Arts)
- HERBERT O. CALVERY, Ph.D., Illinois. Chief, Division of Pharmacology, Food and Drug Administration, Federal Security Agency. Taught in Johns Hopkins University and University of Michigan Medical School. (Physical Sciences)
- ROSCOE H. CARTER, M.S., Iowa State. Chemist, Bureau of Entomology and Plant Quarantine, USDA. (Physical Sciences)
- HARDEE CHAMBLISS, Ph.D., Johns Hopkins. Consulting Chemist and Chemical Engineer, Geophysical Instrument Company. Formerly Dean of School of Sciences and School of Engineering, Catholic University. (Physical Sciences)
- DWIGHT H. CHAPMAN, Ph.D., Harvard. Acting Chief, National Surveys Branch, Civilian Division, Office of Civilian Requirements, War Production Board. (Social Sciences)
- AARON H. CHUTE, Ph.D., Ohio State. Accountant, Regulatory Accounting Division, Office of Distribution, War Food Administration. Taught in Ohio State University and University of Minnesota. (Public Administration)
- L. B. CLARK, B.S., California. Senior Mechanical Engineer, Radiation Research, Smithsonian Institution. Formerly Instructor of Electrical Engineering, University of California, and Physicist, San Francisco Research Laboratory. (Engineering and Mechanical Arts)
- ALICE COFFMAN, Administrative Assistant, Bureau of Areas, Foreign Economic Administration. (Office Techniques)
- RICHARD K. COOK, Ph.D., Illinois. Chief, Sound Section, National Bureau of Standards. Taught in University of Illinois. (Mathematics and Statistics)
- CAREY G. CRUIKSHANK, A.B., King. Senior Fiscal Officer, Office of Scientific Research and Development, Office for Emergency Management. (Office Techniques)
- NORMAN DAVIDS, Ph.D., New York University. Mathematician, Carnegie Institution of Washington. Taught in New York University. (Mathematics and Statistics)
- RAUL D'ECA, Ph.D., George Washington. Foreign Language Associate Editor, Press Unit, Coordinator of Inter-American Affairs. Taught in George Washington. (Languages and Literature)
- W. EDWARDS DEMING, Ph.D., Yale. Adviser in Sampling, Bureau of the Budget. Taught in Universities of Wyoming, Colorado, and Yale University. Special lecturer, National Bureau of Standards. (Mathematics and Statistics)

- GARRETT DE MOTS, B.S., Western State Teachers College, Michigan; graduate study, Michigan State and University of Chicago. Junior Meteorologist, Weather Bureau. (Physical Sciences)
- L. E. DONALDSON, Assistant Chief, Communications Division, in charge of Records Management, Office of Plant and Operations, USDA. Fourteen years' experience in records management work. (Office Techniques)
- GEORGE L. EDICK, Chief Draftsman, Bureau of Agricultural and Industrial Chemistry, USDA. (Engineering and Mechanical Arts)
- EVERETT E. EDWARDS, M.A., Harvard. Agricultural Historian, Bureau of Agricultural Economics, USDA. Taught in Northwestern University; also summer sessions in University of Missouri, and Miami and Catholic Universities. (Social Sciences)
- TAGE U. H. ELLINGER, D.Sc., Harvard. Engaged in private research work. Taught in University of Copenhagen, and Nääs College (Sweden). (Biological Sciences)
- DOUGLAS ENSMINGER, Ph.D., Cornell. Principal Social Scientist, in charge Rural Sociology Extension, Bureau of Agricultural Economics, USDA. Taught in Cornell. (Social Sciences)
- NAOMI H. EVANS, B.S., Grove City College; graduate study, University of Pittsburgh. Associate Training Specialist, Army Air Forces, War Department. (Office Techniques)
- ROBERT R. EVANS, M.A., George Washington; graduate study, American. Executive Officer, Foreign Funds Control, Treasury Department. (Office Techniques)
- FRANCES FERRY, M.F.A., University of Washington. Research Analyst, Office of Strategic Services. Associate in Art, University of Washington. Seven years' study of art in Europe. (Art)
- E. J. FINAN, Ph.D., Ohio State. Associate Professor, Catholic University. (Mathematics and Statistics)
- ALLAN J. FISHER, Ph.D., Pittsburgh. Senior Economic Analyst, Division of Monetary Research, Treasury Department. Taught in Carnegie Institute of Technology, American University, and Universities of Pittsburgh and Maryland. (Public Administration)
- RUDOLF FLESCH, Ph.D., Columbia. Editor and Writer, Executive Office for Price, Office of Price Administration. Formerly research assistant, American Association for Adult Education and Columbia Broadcasting System. Lecturer at Columbia. (Languages and Literature)
- LESTER FRANKEL, M.A., Columbia. Chief, Sampling Section, Current Surveys Division, Bureau of the Census. Lecturer in Statistics, American University. (Mathematics and Statistics)
- ERNESTO GALARZA, Ph.D., Columbia. Chief, Division of Labor and Social Information, Pan American Union. Taught in John Marshall College of Law and Yearlong School. Wide lecturing experience.
- HARRIET GARRELS, M.A., George Washington. Art Supervisor, Public Schools, District of Columbia. Taught in Abbott Art School and Wilson Teachers College. (Engineering and Mechanical Arts)
- MARTIN A. GARSTENS, D.Sc., Massachusetts Institute of Technology. Assistant Meteorologist, Weather Bureau. Taught in Massachusetts Institute of Technology. (Physical Sciences)

- WESLEY M. GEWEHR, Ph.D., Chicago. Chairman, Department of History, University of Maryland. (Social Sciences)
- ENRIQUE A. GIRO, Doctor in Social, Political, and Economic Sciences, National University of Cuba. Associate Foreign Language Editor, Office of the Coordinator of Inter-American Affairs. Director of "Academia Giro" for five years. Taught in Inter-American Training Center. (Languages and Literature)
- MEYER A. GIRSHICK, M.A., Columbia. Mathematical Statistician, Statistical Research Group, Division of War Research, Columbia University. Taught Columbia University. (Mathematics and Statistics)
- R. V. GOGATE, M.A., California; M.Ed., Harvard. Expediter in the Procurement Coordination Branch of the Supply Division, UNRRA. Taught in City College of New York, Bucknell, and Howard. (Languages and Literature, and Social Sciences)
- W. D. GOODSSELL, Ph.D., Iowa State. Principal Agricultural Economist, Division of Farm Management and Costs, Bureau of Agricultural Economics, USDA. Taught in Iowa State College. (Social Sciences)
- EDWARD H. GRAHAM, Ph.D., Pittsburgh. Chief, Biology Division, Soil Conservation Service, USDA. Taught in University of Pittsburgh. (Biological Sciences)
- CHARLES L. GRANT, Administrative Officer, Office of Budget and Finance, USDA. (Office Techniques)
- C. H. GRAVES, Ph.D., Chicago. Head, Special Assignment Unit, Program Planning Section, Office of Price Administration. (Mathematics and Statistics)
- PHILIP L. GREEN, Latin American Specialist, Office of Foreign Agricultural Relations, USDA. Four years' residence and travel in Latin America. Taught Latin American civilization in Inter-American Institute of Roerich Museum, New York; College of City of New York; American University; summer session, University of Maryland. (Social Sciences)
- ROMAIN C. GREENE, M.A., Drake. Taught in Bethany College and University of Maryland. Instructor in English, University of Maryland. (Languages and Literature)
- PAUL L. GRIGAUT, Licencié-ès-Lettres, Sorbonne; Diplômé Ecole du Louve. Principal Translator, Department of State. Taught in University of New Hampshire. (Languages and Literature and Arts)
- R. G. HAINSWORTH, M.A., American. Economic Geographer, Office of Foreign Agricultural Relations, USDA. (Mathematics and Statistics)
- WALTER J. HAMER, Ph.D., Yale. Chemist, National Bureau of Standards, Department of Commerce. Taught in Juniata College, Catholic University, and Yale. Research Associate, Massachusetts Institute of Technology; Research Fellow, Yale. (Physical Sciences)
- CARL H. HANSON, B.S., Wisconsin. Formerly Specialist in Visual Instruction, Extension Service, USDA. Thirty years' experience in lecturing and teaching, primarily in visual instruction, including photography. (Engineering and Mechanical Arts)
- SUSAN E. HARMAN, Ph.D., Johns Hopkins. Professor of English, University of Maryland. (Languages and Literature)
- C. O. HENDERSON, M.S., Cornell. Chief, Division of Training, Office of Personnel, USDA. Taught in public high schools in Mississippi. (Public Administration)

- THOMAS J. HICKEY, LL.M., Columbus University. Lt. (j.g.) U. S. Navy. Formerly, Chief, Civilian Programs Section, Budget Division, Office of Distribution, USDA. (Office Techniques)
- ROBERT L. HILL, A.B., Washington; graduate study, California. Assistant to the Director, Office of Personnel, USDA. (Public Administration)
- FRANCIS P. HOEBER, A.B., Antioch. Senior Economist, Office of Price Administration. (Mathematics and Statistics)
- HARRY B. HUMPHREY, Ph.D., Minnesota. Principal Pathologist (retired), Bureau of Plant Industry, Soils, and Agricultural Engineering, USDA. Taught in Stanford University, Hopkins Marine Station, Washington State College. Member, Cercle Français, D. C. (Languages and Literature)
- WILLIAM HURWITZ, M.A., Columbia. Senior Statistician, Bureau of the Census. (Mathematics and Statistics)
- RICHARD R. HUTCHESON, M.A., Peabody; graduate study, Cornell and Catholic. Assistant Professor of Speech, University of Maryland. Taught in Peabody College, and American, Catholic, and George Washington Universities. (Languages and Literature)
- WOODROW C. JACOBS, M.S., Southern California. Meteorologist, Headquarters, Army Air Forces. (Physical Sciences)
- J. J. A. JESSEL, D.Sc. in E.E., Harvard. Senior Electrical Engineer, Federal Power Commission. (Engineering and Mechanical Arts)
- CHARLES B. JOHNSON, M.A., Illinois; M.S., California Institute of Technology. Assistant Meteorologist, Weather Bureau. (Physical Sciences)
- S. E. JOHNSON, Ph.D., Harvard. Head, Division of Farm Management and Costs, Bureau of Agricultural Economics, USDA. Taught in Montana State and South Dakota State Colleges. (Social Sciences)
- V. W. JOHNSON, Ph.D., Wisconsin. Head, Division of Land Economics, Bureau of Agricultural Economics, USDA. Taught in University of Maryland, North Dakota Agricultural College, and Syracuse University. (Social Sciences)
- MARJORIE C. JOHNSTON, Ph.D., Texas. Consultant on the Teaching of Spanish, U. S. Office of Education. Taught in University of Texas (summer sessions) and Stephens College. (Languages and Literature)
- W. A. JUMP, Director of Finance and Budget Officer, USDA. Lecturer, American University. (Public Administration)
- RALPH B. KENNARD, Ph.D., Chicago. Physicist, National Bureau of Standards, Department of Commerce. Taught in University of Shanghai, Robert College in Constantinople, and Wilson Teachers College. (Physical Sciences)
- JUDSON KING, Writer, Lecturer, and Consultant on power policy. (Engineering and Mechanical Arts)
- J. K. KNUDSEN, LL.M., Commerce Counsel, Office of the Solicitor, USDA. (Public Administration)
- RALPH KOEBEL, S.J.D., Georgetown. Chief, Division of Research and General Legal Service, Office of the Solicitor, USDA. (Public Administration)
- ROLAND L. KRAMER, Ph.D., Pennsylvania. Chief, Planning Section, Division of Statistics and Research, War Shipping Administration; Professor of Commerce and Transportation, University of Pennsylvania; and Secretary of the Foreign Traders Association of Philadelphia, Inc. (Social Sciences)

- SOPIA KRISILLAS, Graduate, Normal School, Panama City. Attended Johns Hopkins University, 3 years. Taught in private schools. (Languages and Literature)
- LOUIS J. KROEGER, M.A., California. Director, Administrative Operations Division, Rationing Department, Office of Price Administration. Formerly lecturer, University of California. Ten years of administrative and consulting experience in public personnel administration in state and local government. (Public Administration)
- HENRI A. KUYPER, educated in Holland. Principal Translator, Bureau of Plant Industry, Soils, and Agricultural Engineering, USDA. Taught private language lessons in Holland and Washington, D. C. Former resident of Dutch East Indies. (Languages and Literature)
- FRED J. KYTILE, Senior Administrative Officer, Office of Distribution, USDA. Extensive experience in Federal auditing and commercial accounting. (Office Techniques)
- PIETRO LAZZARI, Master Artist, Ornamental School of Rome. Belle Arti. Agricultural Information Specialist, Office of Distribution. Portrait artist, landscape painter, and graphic designer. (Art)
- MAX LEDERER, Ph.D., University of Vienna, Austria. On the staff of the Legislative Reference Service, Library of Congress. Taught in Municipal Teachers College, Vienna, and Coe College. (Languages and Literature)
- MICHAEL LEVER, Doctor en Filosofia y Letras, University of Madrid. Chief, Editorial and Review Section, Publications Division, Civil Aeronautics Administration. Taught in Ciudad Universitaria, Madrid. (Languages and Literature)
- C. H. LEINEWEBER, Ph.D., University of Fribourg, Switzerland. Head, Department of Romance Languages, American University. Taught languages in Russia and Switzerland. (Languages and Literature)
- RENSIS LIKERT, Ph.D., Columbia. Head, Division of Program Surveys, Bureau of Agricultural Economics, USDA. (Social Sciences and Public Administration)
- S. B. LITTAUER, D.Sc., Massachusetts Institute of Technology. Project Engineer, Bendix Radio. Formerly Instructor of Mathematics, U. S. Naval Academy. (Mathematics and Statistics)
- BLAKE M. LORING, D.Sc., Massachusetts Institute of Technology. Metallurgist, U. S. Naval Research Laboratory. Taught in Massachusetts Institute of Technology. (Physical Sciences)
- W. J. LYNOTT, E.E., Rensselaer Polytechnic. Engineer, Federal Power Commission. (Engineering and Mechanical Arts)
- WILLIAM G. MADOW, Ph.D., Columbia. Statistician, Bureau of the Census. Taught in Hunter College. (Mathematics and Statistics)
- JAMES MAGIN, D.D., University of Athens. Taught modern Greek in UNRRA classes at University of Maryland. (Languages and Literature)
- MARIO MAIOLATESI, LL.M., Catholic. Commercial Specialist. Foreign Funds Control, Treasury Department. Taught in Catholic University. (Languages and Literature)
- MILADA F. MARSALKA, graduate chemist, Technical College for Chemistry, Prague. Observation Monitor, Foreign Broadcast Intelligence, Federal Communications Commission. (Languages and Literature)

- CHARLES N. MASON, M.A., Montana. Chief, Division of Accounts, Office of Budget and Finance, USDA. Taught at State University of Montana. (Public Administration)
- ARTHUR B. McLEAN, M.A., Alabama; graduate study, North Carolina and American. Director of Personnel, Federal Security Agency. Taught in University of Alabama, Brenau College, North Georgia College, and George Washington University. (Public Administration)
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- O. A. POPE, Ph.D., Iowa State. Agronomist, Bureau of Plant Industry, Soils, and Agricultural Engineering, USDA. Taught in Universities of Delaware and Arkansas. (Mathematics and Statistics)

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- ELBRIDGE C. PURDY, Assistant Chief, Photographic Section, Office of Plant and Operations, USDA. Twenty-five years' general photographic experience. (Engineering and Mechanical Arts)
- C. M. PURVES, M.A., Minnesota. Principal Agricultural Economic Statistician, Office of Foreign Agricultural Relations, USDA. Taught in Texas A. & M. College. (Mathematics and Statistics)
- JACK ROMAGNA, Official Shorthand Reporter, The White House. Experience as stenographer, secretary, and shorthand reporter for many years. (Office Techniques)
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- WILLIAM H. ROWE, M.S., Kansas State. Chief, Program Division, Federal Crop Insurance Corporation, USDA. Taught in Kansas State College and University of Akron. (Public Administration)
- LEOPOLDO T. RUIZ, Ph.D., California. Member of Technical Advisory Committee to President of the Philippine Commonwealth. Taught in National Teachers College, Manila, and Universities of Manila and Philippines. (Social Sciences)
- JOHN C. RUSSELL, Ph.D., Stanford. Principal Administrative Analyst, Bureau of the Budget. Taught in Stanford and Syracuse Universities. (Public Administration)
- OLIVIA RUSSELL, M.A., Columbia; graduate study toward Ph.D. in Romance Languages, Columbia. Teacher of Spanish, Central High School. (Languages and Literature)
- GEORGE M. SAHAROV, A.B., California at Los Angeles; graduate study, California, American, and Harvard; graduate of Classical Gymnasium, Tula, Russia. Taught in University of Southern California and private instruction according to Russian Gymnasium program, Shanghai, China. (Languages and Literature)
- VERNE L. SAMSON, A.B., Washington State; graduate study, California and Radcliffe. Training and Employee Relations Advisor, Personnel Division, Federal Public Housing Authority. Taught in Whitworth and Washington State College. (Office Techniques)
- WALLACE S. SAYRE, Ph.D., New York University. Director of Personnel, Office of Price Administration. Taught Washington College and New York University. (Public Administration)
- EMIL SCHELL, M.A., Western Reserve. Chief, Cost of Living Index Section, Bureau of Labor Statistics, Department of Labor. (Mathematics and Statistics)
- RAINER W. SCHICKELE, Ph.D., University of Berlin, College of Agriculture. Agricultural Economist, Division of Program Surveys, Bureau of Agricultural Economics, USDA. On leave as Associate Professor of Economics, Iowa State. (Social Sciences)
- EDGAR A. SCHULER, Ph.D., Harvard. Taught at Louisiana State University. Senior Social Scientist, Bureau of Agricultural Economics, USDA. (Social Sciences)

- ERIC T. SCHULER, B.S.L., Columbia. Associate Research Analyst, Office of Strategic Services. Taught in Cornell University. (Languages and Literature)
- IOLA R. SCOFIELD, M.A., California. Taught in University of California, New York University, and Adult School of St. John's College. (Languages and Literature)
- ALEXANDER L. SHANDS, B.S., College of City of New York. Associate Meteorologist, Hydrometeorological Section, Weather Bureau. (Physical Sciences)
- JASPER B. SHANNON, Ph.D., Wisconsin. Assistant Director, Graduate School, USDA. Professor of Political Science, on leave University of Kentucky. Taught in Transylvania, Kentucky, Wisconsin. (Social Sciences)
- A. K. SHOWALTER, A.B., Loras; graduate study, Massachusetts Institute of Technology and George Washington. Meteorologist in Charge, Hydrometeorological Section, Weather Bureau. (Physical Sciences)
- C. T. SMITH, Records Management and Procedure Analyst, Communications Division, Office of Plant and Operations, USDA. (Office Techniques)
- HAMPTON K. SNELL, Ph.D., Yale. Assistant Director of Research in Charge of Public Utilities Section, Army Industry College, Office Secretary of War. Taught in Universities of Montana and Southern California. (Social Sciences)
- S. A. SNYDER, Assistant to the Director, Procurement Division, Treasury Department. (Public Administration)
- STANLEY A. SOKOLOFF, Associate Materials Engineer (textiles), U. S. Maritime Commission. Formerly Consulting Textile Technologist. (Engineering and Mechanical Arts)
- O. GLENN STAHL, Ph.D., New York. Assistant Director of Personnel, Federal Security Agency. Taught in New York University and extension instructor, University of Tennessee. (Public Administration)
- J. GORDON STEELE, Ph.D., Ohio State. Senior Soil Scientist, Soil Conservation Service, USDA. Seven years' experience at Ohio Agricultural Experiment Station. (Physical Sciences)
- MILDRED R. STEPHENS, B.S. in Secretarial Science, Alabama College. Training Specialist, Civilian Personnel Division, Headquarters, Army Air Forces. (Office Techniques)
- J. STEVENS STOCK, M.A., American. Lt. (j.g.), U. S. Navy. Lecturer in Statistics, American University. (Mathematics and Statistics)
- ALEXANDER STURGES, B.S., Oregon Agricultural. Assistant Chief, Employment and Occupational Outlook Branch, Bureau of Labor Statistics, Department of Labor. (Mathematics and Statistics)
- AFIF I. TANNOUS, Ph.D., Cornell. Agricultural Economist, Office of Foreign Agricultural Relations, USDA. Taught in University of Beirut, St. Lawrence and Cornell Universities. (Languages and Literature, and Social Sciences)
- CARL C. TAYLOR, Ph.D., Missouri. Head, Division of Farm Population and Rural Welfare, Bureau of Agricultural Economics, USDA. Taught in Universities of Texas, Missouri, North Carolina State College of Agriculture, Brookings Institution, and Catholic University. (Social Sciences)
- BENJAMIN J. TEPPING, Ph.D., Ohio State. Statistician, Bureau of the Census. Taught in Ohio State University. (Mathematics and Statistics)

- VALERY J. TERESHTENKO, Engineer of Economics, State Commercial Institute, Prague. Principal Analyst, Central Eastern European Division, Bureau of Areas, United Nations Relief and Rehabilitation Administration. Taught in Cooperative Institute, Prague. (Social Sciences)
- SIDNEY TEWELES, JR., M.S., Marquette; Certificate in Meteorology, University of Chicago. Analyst, Weather Bureau. Taught in University of Chicago. (Physical Sciences)
- FREDERICK L. THOMSEN, Ph.D., Wisconsin. Head, Division of Marketing and Transportation Research, Bureau of Agricultural Economics, USDA. Formerly Assistant Professor of Agricultural Economics, Kansas State College, and Professor of Agricultural Economics, University of Missouri. (Social Sciences)
- FRANK THONE, Ph.D., Chicago. Staff Member, Science Service. Taught at North Dakota Agricultural College and University of Florida. (Languages and Literature)
- JOHN F. TIMMONS, M.A., Missouri. Senior Agricultural Economist, Bureau of Agricultural Economics, USDA. Taught in University of Wisconsin. (Social Sciences)
- I-MIEN TSIANG, Ph.D., Johns Hopkins. Economic Analyst, Foreign Economic Administration. Taught languages in China. (Languages and Literature)
- MORRIS B. ULLMAN, M.A., American. Statistician, Bureau of the Census. (Mathematics and Statistics)
- ALBERT VITON, Ph.D., Northwestern. Chief, Coordination and Appraisal Division, Office of Distribution, USDA. Taught in Northwestern University. Formerly foreign correspondent in Europe and Near East. (Social Sciences)
- NATHALIE VON BRETZEL, Junior College Diploma, St. Petersburg. Senior Research Assistant, USSR Section, Reference and Editorial Division, Office of Strategic Services. Taught in National Park Junior College. (Languages and Literature)
- HARRY W. VON LOESECKE, B.S., Harvard. Chief, Technical Services, Special Commodities Branch, Office of Distribution. 'Twenty years' experience in food chemistry; author, *Outlines of Food Technology* and *Drying and Dehydration of Foods*. (Physical Sciences)
- DUNCAN WALL, B.J., Missouri. Vice President and member Editorial Staff, Farm Reports, Inc. Formerly Assistant Director, Office of Information, USDA. Taught in University of Oklahoma. (Public Administration)
- KATHRYN PAINTER WARD, M.A., George Washington. Assistant Professor of English, University of Maryland. (Languages and Literature)
- RAY WARD, A.B., Washington. Chief, Division of Purchase, Sales, and Traffic, Office of Budget and Finance, USDA. (Office Techniques)
- MAX J. WASSERMAN, Docteur es Sciences Economiques, University of Lyons, France. Head Economic Analyst, Foreign Economic Administration. Taught in Universities of Illinois, Chicago, and Lyons (France). Fellow, Social Science Research Council, in France, 1927-29. (Social Sciences)
- MICHAEL T. WERMEL, Ph.D., Columbia. Chief, Economic Studies Section, Bureau of Old Age and Survivors Insurance, Social Security Board. Taught in Brooklyn College. (Social Sciences)

- CLAYTON E. WHIPPLE, M.S. in Ed., Cornell. Principal Agricultural Economist, Office of Foreign Agricultural Relations, USDA. Formerly lecturer in Universities of Sofia and Zagreb; Head, Department of Geography and Sociology, State Teachers College, Oneonta, New York. Formerly Director of Rural Education, Near East Foundation in Balkans and Near East, and Adviser in Agriculture and Education to the Royal Bulgarian Government. (Social Sciences)
- HELEN W. WILLIAMS, M.A., Columbia; graduate study, American. Editor, Library, USDA. (Office Techniques)
- JAMES R. WILSON, Jur.Sc.D., Columbia. Principal Attorney, Office of the Solicitor, USDA. Taught in Stetson University, and University of Pittsburgh. (Public Administration)
- M. C. WILSON, B.S., Cornell. Deputy Director of Extension, in Charge Farm Labor Program, USDA. Taught summer session courses at Universities of Wisconsin, Louisiana, Maryland, Purdue, Arkansas, State Agricultural College of Colorado, Virginia Polytechnic Institute. (Languages and Literature)
- DEWITT C. WING, Senior Information Specialist, Office of Information, USDA. (Languages and Literature)
- C. WINSTON, Ph.D., Pennsylvania. Progress Division, Bureau of Statistics, War Production Board. Taught in University of Pennsylvania. (Mathematics and Statistics)
- MARGARET J. WOODS, M.A., Middlebury; Certificate, Centro de Estudios Historicos, Madrid. Research Analyst, War Department. Taught in Arlington Hall and Mary Lyon Junior Colleges. (Languages and Literature)
- JOSEPH G. YOSHIOKA, Ph.D., California. Director, Oriental Science Literature Service, American Documentation Institute. Taught in Yale and Tokio Imperial Universities. (Languages and Literature)
- OSCAR ZAGLITS, D. Rerum Politicarum, University of Vienna. Agricultural Economist, in charge of Short-Term Credit Section, Division of Agricultural Finance, Bureau of Agricultural Economics, USDA. Twenty years' lecturing on economic and financial subjects. (Social Sciences)
- HOWARD ZAHNISER, A.B., Kingsville. Principal Research Writer, Bureau of Plant Industry, Soils, and Agricultural Engineering, Agricultural Research Administration, USDA, and Book Editor, *Nature Magazine*. (Languages and Literature)
- H. ZINDER, M.B.A., Northwestern. Chief, Division of Rates and Research, Federal Power Commission. Taught in Northwestern University. (Engineering and Mechanical Arts)
- DAVID ZISKIND, Ph.D., Johns Hopkins. Director, Manpower Programming Division, Office of Manpower Requirements, War Production Board. Taught in Southwestern University of Los Angeles. Formerly, Labor Adviser in N.R.A., and Resettlement Administration. (Social Sciences)

Lecturers and Assistants

- PAULINE W. BERRUM, M.B.A., Armstrong. Senior Clerk, Office of Distribution, USDA. (Public Administration)
- HELEN L. BLOCK, B.C.S., Benjamin Franklin. Fiscal Accountant, Federal Crop Insurance Corporation. (Public Administration)
- MARY B. BRADLEY, M.A., Scientific Editor of Indexes, Division of Publications, Office of Information, USDA. (Languages and Literature)
- LOUIS H. FRANKEWICH, LL.B., Chief of Field Services Branch, Office of Price Administration. (Languages and Literature)
- E. F. GALLAGHER, Chief, Printing Section, Division of Publications, Office of Information, USDA. (Languages and Literature)
- FALBA L. JOHNSON, M.A., M.S., Editor on *Journal of Agricultural Research*, Division of Publications, Office of Information, USDA. (Languages and Literature)
- J. P. JOHANSSON, Chief Portrait Photographer, War Department. (Engineering and Mechanic Arts)
- VERNE B. LEWIS, M.A., Lieutenant, USNR, Management Engineer's Office, Navy Department. (Public Administration)
- ROY E. MILLER, B.S., Chief, Editorial Section, Division of Publications, Office of Information, USDA. (Languages and Literature)
- H. STEWART POTTER, Printing Officer, Treasury Procurement, Duplicating and Distribution Branch, National War Agencies. (Languages and Literature)
- W. R. QUIGLEY, B.S., California. Assistant Director of Finance, USDA. (Public Administration)
- RALPH S. ROBERTS, LL.B., Assistant Director of Finance, USDA. (Public Administration)
- ROBERT A. WALKER, Ph.D., Assistant to the Director of Finance, USDA. (Public Administration)
- JOSEPH C. WHEELER, M.A., Chief, Division of Estimates and Allotments, Office of Budget and Finance, USDA. (Public Administration)
- CHARLOTTE L. WHITE, M.A., Editor of General Publications, Division of Publications, Office of Information, USDA. (Languages and Literature)
- FRANK H. WILDUNG, Photographer, National Geographic Society and Fellow of Royal Photographic Society of Great Britain. (Engineering and Mechanic Arts)

Index

- | | | |
|--|--|---|
| <p>Accounting and Auditing, 37, 54, 60 Administration Board, 2 Administration courses, 37, 55 Administration, Officers of, 2 Admission, 8 American University, 10 Agricultural Economics, 67 Arabic, 22 Art, 15 Budgetary Admn., 59 Biological Sciences, Dept. of, 11 Botany, 11 Certification of Record, 10 Certified Statements of Accomplishment, 6, 28, 51 Chemistry, 43 Chinese, 22 Civil Service Commission, 9 Clerical-Admn. Procedures, 37 Counseling, 6 Correspondence Study, 7 Course Symbols, 11 Credit, Certification, 9, 10 Czech, 22 Dutch, 22 Ecology, 12 Economic Theory, 69 Economic Geography, 69 Economics, 65 Editing, 19 English, 18, 39 Engineering and Mech. Arts, Dept. of, 13</p> | <p>Engineering, 14 Entomology, 11 Faculty, 6, 76 Fellows and Interns, 7 Fees, 8 Finance, 59, 60, 66 French, 23 Information, General, 3 Genetics, 11 Geography, 45 Geology, 45 German, 23 Graphic Presentation, 14 Graduate School History, Objectives, 3 Authority, 4 Administration, 4 Role in Dept., 4 Greek, 24 Hindustani, 24 History, 70 Italian, 24 Japanese, 24 Labor Economics, 68 Languages and Literature, Dept. of, 18 Languages, Foreign, 21 Letters and Reports, 39 Lectures, 5 Library Assistantships, 6 Library Facilities, 6 Literature, 26 Malay, 24 Management, 55 Mathematics and Statistics, Dept. of, 27 Mathematics, 31 Mechanical Arts, 15 Metallurgy, 45 Meteorology, 46 National Institute of Public Affairs, 7</p> | <p>Office Techniques and Operations, Dept. of, 37 Officers, 2 Personnel Administration, 39, 57 Photography, 13 Physics, 48 Physical Sciences, Dept. of, 43 Polish, 25 Political Science, 70 Portuguese, 25 Program Planning, 8 Psychology, 71 Publications, 5 Public Administration, Dept. of, 49 Public Admn., General, 55 Public Law, 71 Public Relations, 58 Purchasing, 59 Registration, 8 Regulations, 7 Regional Studies, 72 Room Schedule, 9 Russian, 25 Secretarial Practices, 40 Shorthand, 40 Social Sciences, Dept. of, 62 Sociology, 74 Soil Science, 46 Spanish, 25 Speech, 20 Statistics, 33 Textiles, 15 Transportation and Traffic, 75 Utility Administration and Regulation, 16 Writing, 18, 39</p> |
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